Affective Critical Play:

Radical Design of Hybrid Museum Experiences

Karin Ryding

PhD Dissertation
IT University of Copenhagen
2020

Abstract

This dissertation takes as its point of departure Mary Flanagan's well-known concept of 'critical play' – a form of play that purposely challenges dominant worldviews and power structures. The main innovation of the dissertation lies in the introduction of critical play into the museum world. This is done through the design and evaluation of two hybrid museum experiences, in which mobile phone apps are used to playfully reframe the physical museum visit. By exploring the *relational* and *performative* capacities of play, both theoretically and practically, I extend Flanagan's work and put forward a new concept of 'affective critical play'. In this way, my research serves as a bridge between game studies and the field of Human-Computer Interaction (HCI), particularly in relation to research concerned with digital museum experiences.

The methodological approach I have used in my work is taken from Research through Design (RtD), in which knowledge is produced through reflections on design practice. I have engaged with a critical/reflective design methodology, which means that my aim has not been to solve a specific problem, but rather to find and explore tensions in order to reach new insights. This includes interweaving design research with museology, feminist theory, play theory and affect theory to create a new synthesis.

The first design experiment described, "Monuments for a departed future", is a critical play with a contested heritage. It was carried out at The Museum of Yugoslavia, in Belgrade, Serbia, located on the grounds of the former communist leader Josip Broz Tito's palace. By enabling a distinctly personal, intimate and playful approach to Yugoslav history, the design adopts what Andrea Witcomb refers to as a 'pedagogy of feeling' for museums.

In the second design experiment, "Never let me go", the design focuses particularly on the social dynamics of play. This is a two-player experience for art museums which was trialled at the National Gallery of Denmark in Copenhagen. By setting up two roles through which one player was in charge of the other player's experience, a smartphone app was used to promote an acute awareness of the personal, social, cultural and material boundaries of the museum visit.

By challenging norms and expectations through emphasising *emergence, ambiguity, defamiliarization, intimacy* and *trust*, I propose that the design of hybrid museum experiences to foster *affective critical play* may serve a double purpose. Firstly, it may provide an opportunity for researchers to study play as a critical practice with transformative potential; secondly, it works as a form of disruptive innovation pointing towards radically new ways to act and interact – to experience and to become – during a museum visit.

Keywords: HCI, interaction design, game studies, play design, critical play, hybrid experiences, museum interactions, emergence, ambiguity, intimacy, affect, affective

Resume på dansk

Denne afhandling tager udgangspunkt i Mary Flanagans velkendte begreb om 'kritisk leg' ('critical play') – en form for leg, der bevidst udfordrer dominerende verdensanskuelser og magtstrukturer. Det primære bidrag i afhandlingen ligger i at introducere begrebet om kritisk leg til museumsverdenen. Dette gøres gennem design og dernæst evaluering af to hybride museumsoplevelser, hvori mobiltelefonsapplikationer anvendes til legende at skabe en ny tilgang til det fysiske museumsbesøg. Gennem en udforskning af de *relationelle* og *performative* aspekter ved leg udvider jeg Flanagans arbejde såvel teoretisk som praktisk, hvorved jeg foreslår et nyt begreb om 'affektiv kritisk leg' ('affective critical play'). På denne måde tjener min forskning som en bro mellem henholdsvis spilstudier og forskningen i Human-Computer Interaction (HCI), særligt hvad angår forskning vedrørende digitale museumsoplevelser.

Den metodologiske tilgang, jeg har anvendt i dette arbejde, stammer fra designforskning ('Research through Design'), hvori viden produceres gennem refleksioner om designpraksis. Jeg har anvendt en kritisk/refleksiv designmetodologi, hvilket betyder, at mit sigte ikke har været at løse et specifikt problem, men snarere at finde og udforske spændinger for at opnå nye indsigter. Dette inkluderer en sammenfletning af designforskning med museologi, feministisk teori, legteori og affektteori med henblik at skabe en ny syntese.

Det første designeksperiment, "Monuments for a departed future", er en kritisk leg med en omstridt historisk arv. Det blev udført ved The Museum of Yugoslavia i Beograd i Serbien, som er placeret på den grund, hvorpå den forhenværende kommunistiske leder Jozip Broz Titos palads lå. Ved at facilitere en særligt personlig, intim og legefuld tilgang til Eksjugoslaviens historie adopterer designet, hvad Andrea Witcomb omtaler som en 'følelsespædagogik' ('pedagogy of feeling') for museer.

I det andet designeksperiment, "Never let me go", fokuserer designet specifikt på legens sociale dynamikker. Dette er en oplevelse for to til kunstmuseer og blev testet på Nationalmuseet i København. Ved at sætte to roller op over for hinanden, hvor den ene spiller havde magten over den anden spillers oplevelse, blev en smartphone-applikation anvendt til at fremme en intens opmærksomhed af de personlige, sociale, kulturelle og materielle rammer om museumsbesøget.

Ved at udfordre normer og forventninger ved at understrege *emergens, flertydighed, affortroliggørelse, intimitet* og *tillid* foreslår jeg, at designet af hybride museumsoplevelser til at fremelske *affektiv kritisk leg* kan tjene et dobbelt formål. For det første kan det give forskere en mulighed for at studere leg som en kritisk praksis med et transformativt potentiale. For det andet virker det som en form for innovation, der peger mod radikalt nye måder at handle og interagere på – at opleve og blive – i løbet af et museumsbesøg.

Nøgleord: HCI, interaktionsdesign, spilstudier, legdesign, kritisk leg, hybride oplevelser, museumsinteraktioner, emergens, flertydighed, intimitet, affekt, affektiv

Acknowledgements

When I write this, it is at the very end of a difficult and turbulent year, 2020. As this year comes to its end, so too does my PhD project. Thinking back, I realise that I have been lucky. Even though the pandemic affected me and my family, it did not have a lasting negative impact on my health or my work process. For this I am very grateful as I am aware how others have struggled. Entering the academic world to become a PhD was a significant shift for me. It took some time to adjust and to navigate these new waters. I want to thank my main supervisor Anders Sundnes Løvlie for supporting me in this process. It was important for me to know that there was always someone I could turn to for help and advice about everything from academic to practical matters. In my research process, I also found myself in acute need of someone who could help me sort out my muddled ideas on theories of play, relationality, performativity, and so on. I want to thank my co-supervisor Miguel Sicart for his patience in helping me articulate my ideas on affective critical play. Furthermore, I want to thank all my colleagues in the GIFT project, especially Jocelyn Spence, Steve Benford, Annika Waern, Paulina Rajkowska and again Anders, for great collaborations. A special thank you goes to Raquel Meyers for her wonderful contribution to the Monuments-prototype as well as to Mace Ojala for his friendship during these years and support during the development of "Never let me go". I also want to thank Bogdan Spanjevic for our collaboration and for his friendship. I am also grateful to curators Ivan Manojlovic, Sara Sopić and Dusan Jevtic who were very welcoming and helped me during my time at The Museum of Yugoslavia in 2017.

During the latter half of my PhD project, I became part of the AIR lab at ITU. This has been a great inspiration and help to me during my process. I especially want to thank Jonas Fritsch for our collaboration and for helping me getting my head around the intricacies of affect theory. I hope this is just the beginning of our work together. I also want to thank Halfdan Hauch Jensen for his help with the GSR sensors and for trying to make sense out of the data they provided. I am sure we can make something out of this in the future. I also want to thank Lena, Stine, Vasiliki, Maria and the rest of the AIR lab research group for our inspiring discussions and breathing sessions. I look forward to continuing our work together.

During my research process I have also been helped by other colleagues from the Centre for Computer Games Research, the department of Digital Design and other departments at ITU. Here I especially want to mention

Sara Homewood and Baki Cakici who have read my work and given me valuable feedback at times when I most needed it. I am very grateful for this. I am also extremely grateful to Graham Timmins who have helped me by proofreading and correcting my English language in this dissertation as well as in some of my papers. This has been a wonderful support to me, but what I value even higher is his friendship and personal support over these years. Other friends I want to thank especially are Thom, Lena, Karin, Frederik, Christian, Marie, Maria and again Sara and Mace for their help and feedback during the testing and development of "Never let me go". I also want to thank my parents who have supported me in my work. My sweet mother who never complains, but gladly jumps on the train to Copenhagen to come and take care of my son when I most need it. My father who has gone through so much hardship these last few years and who nearly died from us. I am so very grateful to both of you for being there in my life. This also includes my mother-in-law, Ilse Nørr, who often come all the way from Århus to support me and Lars. Finally, my gratitude goes to Lars and Finn. Words cannot express how very grateful I am to have them in my life. Lars has not only supported me emotionally and by giving me time to work, but he has also helped me by proofreading my texts and by guiding me in my endeavor to understand qualitative research. Finn was born during the first year of my PhD project and he is now three years old. He has already taught me incredibly much about life and about play. I cherish every moment of his time.

Copenhagen, December 2020
Karin Ryding

Contents

ABSTRACT 2

RESUME PÅ DANSK 4

ACKNOWLEDGEMENTS 6

CONTENTS 8

1. INTRODUCTION 10

- 1.1 BACKGROUND: UNDERSTANDING THE MUSEUM 11
  - *1.1.1 Challenging the Museum 12*
  - *1.1.2 Museums as Ritual 13*
  - *1.1.3 Play as Institutional Critique 14*
- 1.2 AFFECTIVE CRITICAL PLAY 15
  - *1.2.1 The GIFT Project 15*
  - *1.2.2 Research Questions 16*
  - *1.2.3 Outline of the Thesis 16*
  - *1.2.4 Summary of Main Research Contributions 17*
  - *1.2.5 My Research Approach 18*
- 1.3 OVERVIEW OF PAPERS INCLUDED IN THE DISSERTATION 19
  - *1.3.1 Related Publications not included in the dissertation 23*

2. RELATED WORK 25

- 2.1 THE THIRD PARADIGM OF HCI 25
- 2.2 ARTICULATING PROBLEMS AND MAKING TROUBLE: CRITICAL DESIGN 26
- 2.3 TAKING THE EMOTIONAL SPHERE SERIOUSLY: AFFECTIVE DESIGN 28
  - *2.3.1 Affective Interaction Design for a Changing World 31*
- 2.4 MAKING USE OF THE MAGIC CIRCLE: PLAY DESIGN 32
  - *2.4.1 Critical Potential at the Edge of the Magic Circle 34*
- 2.5 CRITICAL, AFFECTIVE AND PLAYFUL APPROACHES TO HYBRID MUSEUM EXPERIENCES 36

3. THE THEORY OF AFFECTIVE CRITICAL PLAY 39

- 3.1 WHAT IS AFFECTIVE CRITICAL PLAY? 39
- 3.2 PLAY 40
  - *3.1.1 Different Ways to Frame Play 41*
  - *3.1.2 The Magic Circle of Play 42*

3.1.3 Ambiguity in Play 43
3.1.4 Performance in Play..43
3.1.5 Relational Play 44
3.2 AFFECT AS A RELATIONAL LIFE-FORCE 45
3.2.1 Intimacy as Modulator of Affective Intensities 47
3.2.2 Play as a Critical Relational Technique...47
3.3 PERFORMATIVITY AND ENACTED CRITIQUE 48
3.3.1 Play as Enacted Critique 49
3.4 AFFECTIVE CRITICAL PLAY AS AN EXTENSION OF MARY FLANAGAN'S WORK 50
3.4.1 Critical Play 50
3.4.2 Extending Critical Play 51
3.4.3 Affective Critical Play 52
4. METHODOLOGY 53
4.1 ASKING QUESTIONS THROUGH DESIGN 53
4.2 A CRITICAL/REFLECTIVE APPROACH 54
4.3 MY APPROACH: STUDIES AND PROCESS 57
4.3.1 First Study: Monuments for a Departed Future 57
4.3.2 Second Study: Never Let Me Go 60
4.3.3 My Process...66
4.4 THE MOBILE PHONE AS MEDIATOR OF PLAY 70
5. DISCUSSION... 73
5.1 EMERGENCE 73
5.2 AMBIGUITY.. 76
5.3 DEFAMILIARIZATION 78
5.4 INTIMACY 79
5.5 TRUST 80
5.6 CONCLUSION 81
6. CONCLUSION.. 83
REFERENCES 87

1. Introduction

> *I madly love everything that adventurously breaks the thread of discursive thought and suddenly ignites a flare illuminating a life of relations fecund in another way.*
>
> André Breton (Brotchie, 1995, p. 10)

Play is generally not something we associate with a traditional art or history museum. On the contrary, our notions of what a museum is are often coloured by historical practices in which a visit to a museum was made in order to be enlightened, inspired and sometimes even awe-struck by original cultural objects (Agamben, 2007; Bennett, 1995; Cameron, 1971; Duncan, 1995). In play, we appropriate things and make them our own (Agamben, 2007; Henricks, 2015; Sicart, 2014); we create new worlds in which new rules apply (Huizinga, 1938/1998). Therefore, in the context of museums, it is often deemed more appropriate to show reverence than it is to play (science museums being a partial and recent exception).

This dissertation is about the design of hybrid museum experiences for play. 'Hybrid experiences' are experiences in which the physical environment is complemented or overlayed with digital content and affordances. These allow novel perspectives and discourses to be introduced into the existing environment. When implemented in museums, they provide an opportunity to challenge visitors' previous relationships to cultural heritage, to the museum, and to themselves. Therefore, hybrid museum experiences are well suited to fostering *critical play,* which is a concept coined by play scholar and artist Mary Flanagan (2009). Critical play refers to play that has the capacity to challenge power relations, dominant norms and cultural conventions. By taking this approach to hybrid museum experiences, my aim is to contribute to the fields of Human-Computer Interaction (HCI) and game studies. Even though many HCI researchers working with hybrid museum experiences have incorporated play into their designs (e.g. Taylor et al., 2015; Vayanou et al., 2019; Wakkary & Hatala, 2007), little if any research has deliberately focused on the potential of using play in museums as a form of critical intervention. At the same time, although critical play is a well-known and much-debated concept in game studies, it has rarely been explored in the context of the museum experience.

1.1 Background: Understanding the Museum

Over the last thirty years, a great deal of change has taken place in the museum world. First of all, due to a growing critique of traditional museology in the 1980s, a ‘new museology’ (Vergo, 1989) emerged. This grew out of the realisation that cultural objects and museums themselves are representations of a complex, multifaceted and politicised reality (Hooper-Greenhill, 2000). Researchers and commentators saw an urgent need to transform the traditional museum’s one-way delivery of supposedly ‘neutral’ information into a dialogue with the visitors and society at large. It was time to take seriously the many stakeholders whose values, contexts, and stories had long been overlooked. This push for change from academia eventually led to important real-world steps being taken in museums towards inclusion, diversity and public education (see e.g. *ICOM Code of Ethics for Museums*, 2017).

In addition to this underlying change of attitude, another significant development was under way, namely the introduction of digital technology into the museum world. Today the experiences we have at museums are not only more accessible and educational than they once were, they are also often augmented and expanded by the use of digital technology (Tallon & Walker, 2008). According to Eva Hornecker and Luigina Ciolfi, this has turned museums into “fertile research ground for Human-Computer Interaction research” (2019, p. xv).

Digital technology serves many functions in relation to museums. It can play a role when the first thought of going to the museum occurs, or as we process a visit afterwards. Mainly though, technology is used to enhance the physical visit to the museum, for example through educational apps, games or interactive installations which provide visitors with more information or alternative ways to approach the museum collections.

One particular way of enhancing the museum visit is through the creation of hybrid experiences. One advantage of ‘hybrid designs’ (Bannon et al., 2005), is that they can offer alternative objectives, narratives or roles to engage with during a museum visit. This allows for the emergence of novel visitor behavior driven by curiosity, creativity and play. In most cases, this is welcomed by museums as it supports their educational agenda. However, hybrid designs also provide challenges, as they may lead to playful appropriations of the museum in ways that diverge from the curatorial intentions and the overall agenda of the museum. I argue that this very tension can be used constructively in order to provide visitors with alternative museum experiences which serve as playful and affective *museum interventions*.

1.1.1 Challenging the Museum

The use of museum interventions as a form of institutional critique can be traced back to Marcel Duchamp and his early attempts to challenge both established elite art traditions and the expectations of museum visitors (Tomkins, 1996). Since then, museum interventions have become an established feature of so-called 'praxiological museology', a field closely related to (or part of) critical museology.

According to Anthony Shelton (2013), critical and praxiological museologies share a focus on the critical study and exploration of operational museology, the former from a narrative interdisciplinary perspective and the latter through visual and performative media. The main motivation behind both is to challenge dominant narratives and curatorial traditions seen as problematic from a contemporary perspective.

Over the years, many museum interventions have been co-organized or commissioned by museums themselves. One interesting and playful example is "The Couple in the Cage: Two Amerindians Visit the West" by Guillermo Gómez-Peña and Coco Fusco (1992). This was performed in different several countries and museums, for example at the Smithsonian's National Museum of Natural History in Washington D.C and the Australian Museum of Natural History in Sydney (Fusco, 1994). Building on the dark history of the public exhibitions of indigenous peoples in 19th and 20th century Europe, also known as the 'human zoo', the two artists had themselves locked in a cage inside the museums. Students and staff members served as guards and assistants. They would feed them, escort them to the bathroom on a leash, and educate the audience about their (fictive) origins. By putting the museum visitors into the ambiguous (and awkward) position of having to decide whether to play along or to intervene in the performance, the artists strived to make visible the long history of abuse and exploitation of indigenous peoples within the museum world (Fusco, 1994).

In other cases, artists and activists have acted without explicit permission from the museums. An example is the work by feminist activist group Guerrilla Girls, formed in 1985 and active to this today. This group regularly (and often playfully) create exhibitions and public advertisements to critique power dynamics related to sexism, racism, and class privilege in museums (*Guerrilla Girls*, n.d.).

However, even though many of the above-mentioned museum interventions make use of play and playfulness, play in a museum context still tends to be associated with learning (Hein, 1998, 2006) rather than with critical practices. This is unfortunate, considering how play can serve as a method to highlight and to challenge certain museum traditions, as well as to create a space for new ways of encountering cultural heritage.

1.1.2 Museums as Ritual

Carol Duncan, in her seminal work, describes art museums as "environments structured around specific *ritual* scenarios" (1995, p. 2). What she is referring to is how museums construct worlds of their own, and how they guide and give cues on how visitors should perform and respond to them. According to Duncan, these are rituals shaped by ideologies and power. In museums, even though people 'misread', scramble or resist cues on how to behave, most of us tend to act in the same manner. We walk slowly and quietly, stopping now and then to look at the artworks. Duncan compares this behaviour to following a script. According to her, the museum's sequenced spaces and arrangements of objects, its lighting and the architectural details provide both the script and a stage set. Visiting a museum is in this sense *ritualized* (c.f. Stephenson, 2015, pp. 74–77). As Duncan puts it,

> The situation resembles in some respects certain medieval cathedrals where pilgrims followed a structured narrative route through the interior, stopping at prescribed points for prayer or contemplation (1995, p. 12).

This is echoed by Georgio Agamben (2007), who describes the museum as a place where material objects are withdrawn from use, made untouchable, put on a pedestal and, as a consequence, rendered sacred. According to him, museums occupy the symbolic space and function once reserved for temples as a place of worship.

This notion of the museum as a temple is something which the museum world has strived to change since the development of the new museology. Already in the early 1970s, Cameron F. Duncan (1971) argued that museums which enshrine objects considered significant or valuable by elite, academic (curatorial) or aristocratic standards are outdated and misrepresentative. However, how museums operate today, and what visitors expect from them, are inevitably linked to their historical background.

The modern museum, as it came into being during the 19th century, was dominated by what Tony Bennett (1995) calls a ‘pedagogy of walking’, involving linear narratives appealing to rational ways of thinking and the strict use of vision as a sensorial tool. Museums were generally seen as having a responsibility to enlighten and improve their visitors, morally, socially and politically (Duncan, 1995). This seems to have created a situation in which museums today are expected to be both rational and informative as well as to provide emotional and transformative experiences (Soren, 2009).

1.1.3 Play as Institutional Critique

Ritual and play are in many ways alike. According to Huizinga, “the ritual act has all the formal and essential characteristics of play” (1938/1998, p. 18). They both support community functions and often take place separate from ordinary life. Yet, there are fundamental differences between the two. According to play scholar Thomas S. Henricks (2015), these differences lie in the way in which they make us *relate to the world*. Rituals involve accepting, adjusting, or conforming to ideas and practices outside of ourselves. By contrast, play encourages us to appropriate and create things and experiences. As Henricks has it, “players (and workers) want to transform the world; ritualists wish to be transformed by otherness” (2015, p. 55).

According to museology professor Jay Rounds, traditional museums stand for an “intensification of order”, providing an ontological security from which meaning and identity can be drawn (2006, p. 139). Alternative ways of being can be explored from a safe distance because things are looked at, rather than experienced first-hand.

Andrea Witcomb (2014, 2015) argues that, as a result of this pedagogical approach, “non-rational forms of knowledge, ones based on bodily sensations and on emotional forms of intelligence” have been neglected (2014, p. 58). In a similar vein, Dianne Mulcahy (2016) argues that there is an untapped potential of affective museum encounters to bring forth new capacities for thinking, doing and being, which can activate visitors’ ethical and political imaginations.

If museums symbolize order, as Rounds suggests, then play can represent the dynamic elements in materiality, identity, society and culture, working towards affective intensification and *against efficacy*. For this very reason, play in museums is most often expected to be clearly contained and informative (with concrete learning goals), as it then works as an element that fulfils its purpose in the ritual. Challenging these structures and expectations by introducing a freer form of play into the museum (for example through hybrid designs), can therefore be a deliberate provocation – a form of institutional critique working in the same tradition as artists and activists have done since the early 1900s. Using play in this way can equally be seen as a way of fostering museum experiences that are more personal and more emotional, as well as more surprising and more fun, than what visitors normally expect from a museum visit.

1.2 Affective Critical Play

Based on the reasoning above, I argue that critical play is a particularly interesting line of inquiry for design research related to hybrid museum experiences. However, critical play in its current theoretical conceptualization covers a very broad spectrum of play and games, ranging from critical videogames to artistic interventions (Flanagan, 2009). Therefore, in order to cater to my needs (and those of other designers) for a theoretical framework which specifically encompasses the relational and performative aspects of critical play, I have worked to extend Flanagan's concept, both theoretically (through theories of affect and performativity) and from a design perspective, by highlighting emergence, ambiguity, defamiliarization, intimacy and trust as five significant design elements. The result of these extensions is what I put forward as 'affective critical play'.

1.2.1 The GIFT Project

This dissertation is the outcome of a PhD project that was initiated as part of GIFT – a three-year long EU-funded research project. The partners in the project included Blast Theory, NextGame, Culture24 and Europeana, as well as three universities: The IT University of Copenhagen, Nottingham University and Uppsala University. The GIFT project aimed to explore hybrid museum experiences through a three-pronged approach which included (a) a design-led research process focused on the concepts of gifting and playful appropriation, (b) an action research project with an international group of museum professionals and (c) a process of theory development. My PhD work was part of the design-led research process which focused on playful appropriation. This included a collaboration with the Serbian design company NextGame.

1.2.2 Research Questions

The main focus of my research has been to define and study affective critical play as a radical design strategy for hybrid museum experiences. I have engaged with this both practically and from a conceptual perspective. The main research questions I set myself were these:

RQ1: How can we design for critical play in order to intensify affective encounters in the museum?

RQ2: How can critical play be reconceptualized using theories of affect and performativity?

These questions have been approached through two design studies. The first study took place at the Museum of Yugoslavia and resulted in a prototype called “Monuments for a Departed Future”. The second study focused on art museums and produced a prototype for a two-player experience called “Never let me go”.

1.2.3 Outline of the Thesis

This is an article-based dissertation, which means that it has two parts. In Part 1, I combine the outcomes of my studies with relevant theoretical analysis to create the concept of affective critical play. Part 2 contains the different papers and articles which are part of my research endeavor. The papers are ordered in the following way: The first two papers discuss the outcomes of my first study at the Museum of Yugoslavia, which included the prototype design named “Monuments for a departed future”. Papers 3-5 discuss my “Never let me go” design and the outcomes of my second study. Papers 6 and 7 take a more theoretical approach to the concept of critical play. My motivation for ordering the papers in this way, is that it mirrors the research process of going from reflection on practical design experiments to the development of theory.

What follows is an overview of the different chapters in Part 1. Chapter 1 (what you are reading now) provides an introduction to the context of this PhD project as well as a discussion of its relevance. It also includes an overview of the methodological approach and the main research questions as well as the main research contributions of my work. Chapter 2 is an overview of related work within HCI/interaction design and game studies. In Chapter 3, I outline the theoretical background to my work. Chapter 4 serves as an introduction to my research methodology. In Chapter 5, I discuss the outcomes of my work. Finally, in Chapter 6, I conclude by revisiting my research questions and contributions.

1.2.4 Summary of Main Research Contributions

In this dissertation I contribute to the fields of HCI and game studies in three ways. This includes (1) a number of 'design articulations' (Dalsgaard & Dindler, 2014) to illustrate issues that have been of particular salience in my design research process, (2) a conceptual reworking of critical play and (3) two hybrid designs for museums.

The first contribution of my work is on a so-called 'intermediate level' (ibid). That means that the concept of affective critical play which I present in this dissertation has been produced, not only theoretically or through specific design exemplars, but also through highlighting a number of design elements which can be built upon in future work. This contribution comes out of my first research question (RQ1) which is concerned with how to design for critical play in order to intensify affective encounters in the museum. In paper 1 and 2 this question is asked in the context of an ideologically contested museum collection, namely the legacy of former Yugoslav communist leader Josip Broz Tito. Paper 1 is concerned with how critical engagement can be fostered through an affective and playful approach. Paper 2 focuses particularly on the challenges that may arise when designing hybrid museum experiences for critical play. Paper 3 goes on to highlight RQ1 by investigating how introspective experiences can be combined with social play in the context of an art museum. In Paper 4, my ludic design approach is compared to that of gift-making, in order to highlight the strategies of intimacy and 'interpersonalization' which these hold in common. In paper 5, in response to RQ1, emergence, ambiguity, intimacy and trust are put forward as important design elements and discussed in relation to my second study. This work is extended in chapter 5 of the first part of this dissertation, where I discuss these elements in relation to both my studies.

The second contribution of my work is on a theoretical level. Here I work with the second of my research questions (RQ2) and the challenge of reconceptualizing critical play using theories of affect and performativity.

In paper 6, I set out to investigate what relationality and performativity entail when it comes to play. This research is complemented by paper 7, in which I examine three theories of play in order to explore what it is that make us able to play critically. In chapter 3 of the first part of this dissertation, I extend these two papers and put forward my concept of affective critical play.

The third contribution of my work are the two designs which were produced as prototypes during the two studies undertaken in this PhD project. The second prototype design in particular, called “Never let me go”, has gained some attention from the museum world, including requests for it to be turned into a commercial product. Links to the prototype (which consists of two interconnected web apps) as well as the source code can be found on the GIFT website at https://gifting.digital/never-let-me-go/.

1.2.5 My Research Approach

In my research process, I have engaged with Research through Design (RtD), a methodology in which research findings emerge from reflections on practice (Zimmerman et al., 2007). I have also favoured a reflective design approach, which is an approach grounded in the Western tradition of critical theory (Sengers et al., 2005). Among other things (see more details in chapter 4), this means making conscious the personal preconceptions which shape our approach to design. Therefore, I will highlight here a few things in my own background which have come to shape my design practice and thus the research I have carried out in this PhD project.

First of all, before becoming a PhD candidate, I worked for over ten years as a game designer and entrepreneur and co-founded Ozma Games, a game studio located in Malmö, Sweden. The projects we took on at Ozma most often had an experimental character. Under the motto: “Everyone has the right to play”, we worked with diverse target groups, such as female skateboarders and hospital workers, and always put play at the centre, rather than games themselves.

Of the learnings I carry with me from those years, the primary one was not to let technology take over my focus as designer. In designing for play, the simplest form of technology is often enough, at least to test the underlying concept. Secondly, I learnt to prototype early and fast, as there is no need to spend time making sure that the details work perfectly, if the concept itself turns out to be flawed.

In addition to working with play in a professional context, I have for many years engaged with play through a dance form called contact improvisation. This is a form of improvised dancing in which you explore your body in relation to others. Dancer Steve Paxton explains it in the following way:

> The exigencies of the form dictate a mode of movement which is relaxed, constantly aware and prepared, and onflowing. As a basic focus, the dancers remain in physical touch, mutually supportive and innovative, meditating upon the physical laws relating to their masses: gravity, momentum, inertia, and friction. They do not strive to achieve results, but rather, to meet the constantly changing physical reality with appropriate placement and energy (1979, p. 26)

Two of the most interesting aspects of contact improvisation in relation to my design practice are the opportunities it gives to explore physical constraints under constant change and the fundamentals of wordless, embodied communication.

Today these learnings are an integrated part of my design practice. Therefore, they have played a role in the decisions I have taken in my research process; a process that has included designing and building prototypes as well as working in-situ at museums, mainly at the Museum of Yugoslavia in Belgrade, Serbia and The National Gallery of Denmark in Copenhagen. It has also meant choosing to evaluate my designs using qualitative methods, because of their usefulness in answering questions about affective experience, meaning and perspective from the standpoint of the participant (Hammarberg et al., 2016).

1.3 Overview of Papers Included in the Dissertation

In this dissertation I have included six papers/articles and one extended abstract, five of which are published and two of which are under review. The status of each is presented below, together with a summary of their main contributions and outcomes.

Paper 1:
Ryding, K. & Løvlie, A. S. (2018).

Monuments for a Departed Future: Designing for Critical Engagement with an Ideologically Contested Museum Collection.
In selected papers and proceedings of the 2018 conference 'Museums and the Web' (MW18). Silver Spring, MD: Museums and the Web

The aim of the study presented was to explore how playful interactions can be used to encourage critical engagement with a museum collection. The study took place at the Museum of Yugoslavia, which is located on the grounds of the palace of former communist leader Josip Broz Tito and houses his grave. In the paper, the design and evaluation of a prototype design called "Monuments for a Departed Future" is elaborated upon. The design included scannable visual markers representing eight different monuments built during the communist era in Yugoslavia. The markers were placed inside the permanent exhibition, as an added layer in tension with the existing museum collection. Each marker served as an entry point to a specific theme relating to the history of the monuments. After scanning a marker, the users would be presented with evocative questions and playful challenges in order for them to connect the history of the monuments with their own personal lives.

The main contribution of the paper is to show that with a rather simple prototype (based on an existing framework), it is possible to facilitate reflections and emotional engagements which can help visitors to connect more deeply with a 'difficult' historical topic. It also highlights that an intervention like this into an existing exhibition structure needs a proper framing for the participants to feel completely comfortable with it. Part of that, when it comes to designing a possibly unsettling experience, is the importance of building trust in the situation.

Paper 2:
Løvlie, A. S., Ryding, K., Spence, J., Rajkowska, P., Waern, A., Wray, T., Benford, S., Preston, W. & Clare-Thorn, E. (In Press).
Playing Games with Tito: Designing Hybrid Museum Experiences for Critical Play.
Accepted for publication in ACM Journal on Computing and Cultural Heritage (JOCCH).

The article covers the design, design process and evaluation of two hybrid museum experiences aimed to facilitate critical play with/in the collections of the Museum of Yugoslavia and the highly contested heritage they represent. The article focuses on the question: What challenges may arise when designing hybrid museum experiences for critical play?

The first design process presented was a collaboration between Serbian design company NextGame and the IT University of Copenhagen. One outcome of this was a prototype of a smartphone app called ‘Twitto’. This is a game that invites visitors to put themselves in the shoes of an autocratic dictator and to learn about propaganda through building their very own cult of personality. The second design was ‘Moments for a departed future (described in Paper 1).

In the article, issues emerging out of (a) using mobile technology to foster play in the museum (as opposed to stationary interactive installations), and (b) the different approaches taken by the two games in terms of connecting with the exhibited artefacts and fostering critical awareness, are discussed. Based on reflections from the design process as well as on feedback from test users, three themes are illuminated: challenging the norms of visitor behaviour, challenging the role of the artefact, and challenging the curatorial authority.

Paper 3:
Ryding, K. (2020).
The Silent Conversation: Designing for Introspection and Social Play in Art Museums.
In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI’20). ACM, 1-10.

This paper presents the challenge of designing hybrid museum experiences that are both deeply personal and social. A design-led study is reported of a mobile web app called “Never let me go” which allowed visitors to playfully guide a companion through the museum. It was trialled at the National Gallery of Denmark.

In the paper, results are presented which show that both introspective experiences and social play could be facilitated by users spontaneously prompting each other to reflect, sense and act in specific ways whilst exploring the art. This led to deeply personal and embodied art experiences, even moments of serendipity, as well as lots of laughter and fun. The paper discusses the implications of letting visitors play with cultural heritage in this way. It also points out potentials as well as challenges concerning the design of tools for non-designers to orchestrate meaningful impromptu experiences for each other.

Paper 4:
Ryding, K., Spence, J., Løvlie, A. S. & Benford, S. (2021)
Interpersonalizing Intimate Museum Experiences.
Published in the International Journal of Human-Computer Interaction (IJHCI). 1-22.

This article focuses on the strategy of 'interpersonalization' in which one museum visitor creates an experience for another. Two hybrid museum designs are presented and discussed together: "Never let me go" (described above) and the 'Gift', an app produced by Blast Theory, in which visitors create personal mini-tours for specific others as gifts. By reflecting on the design of these two experiences and their deployment in museums, the authors show how interpersonalization can deliver engaging social visits in which visitors make their own interpretations. The key takeaway is that by fostering intimacy between visitors, more intimate relationships with the museum exhibits are also enabled.

Paper 5:
Ryding, K. & Fritsch, J. (2020).
Play Design as a Relational Strategy to Intensify Affective Encounters in the Art Museum.
In Proceedings of the 2020 Conference on Designing Interactive Systems (DIS'20). ACM, 681–693.

This paper presents a theoretical foundation emphasising the relational aspects of designing playful museum experiences. It reports on the study of "Never let me go" and the trial that took place at the National Gallery of Copenhagen. The focus is on how the design intensifies players' experiences in four ways: (1) by creating intimacy, (2) by enabling explorations of movement, rhythm, body and space, (3) by stimulating the imagination, and (4) by enabling play with social boundaries. Finally, the potentials and concerns arising from working with relational play strategies in the design of affectively engaging museum experiences is discussed, emphasising emergence, intimacy, ambiguity and trust as key elements.

Paper 6:
Ryding, K. (forthcoming)
Challenging the Illusion of Stability: Relational and Performative Potentials of Critical Play

Under review for publication in Games and Culture published by Sage.

This article is under review by the Sage journal Games and Culture. The article has not yet been reworked after the first round of reviews. The article takes Flanagan's concept of critical play as a point of departure and extends it by elaborating on the relational and performative qualities and capacities of play. This includes play as reflexive action and as exploration of ways of becoming that go beyond language, signification and discourse. The article reports on the design and trial of 'Never let me go' from the perspective of critical play. Three themes are highlighted: (1) the alibi to explore boundaries and to redefine rules, (2) the exposing of power relations and (3) the emergence of new behaviour. The article goes on to discuss the potentials and shortcomings of play as a critical practice and the dangers and pleasures of playing with boundaries. It also considers hybrid designs as a balancing act between ritual and play.

Paper 7:
Ryding, K. (2020)
What makes us able to play critically?
In Proceedings of the 2020 DiGRA International Conference: Play Everywhere (DiGRA '20). 1-3.

This extended abstract was published at the 2020 DiGRA International Conference (DiGRA '20). It builds on Flanagan's notion of critical play and extends it by raising the question: What does it mean to play *critically*? By focusing on the psychological conditions for critical play to take place in a real-world environment, it explores three different, but intimately intertwined, playful states of mind which are potential enablers for critical play, namely 'brink awareness', 'boundary flexibility' and 'openness to world-travelling'.

1.3.1 Related Publications not included in the dissertation

Back, J. et al. (2018).
GIFT: Hybrid Museum Experiences through Gifting and Play. In A. Antoniou & M. Wallace (Eds.), *Proceedings of the Workshop on Cultural Informatics co-located with the EUROMED International Conference on Digital Heritage 2018* (EUROMED 2018) (Vol. 2235, pp. 31–40). Retrieved from http://ceur-ws.org/Vol-2235/paper4.pdf

Løvlie, A. S., Eklund, L., Waern, A., Ryding, K., & Rajkowska, P. (2020).
Designing for interpersonal museum experiences. In G. Black (Ed.), Museums and the Challenge of Change: Old institutions in a new world (pp. 223–238). Routledge.

Ryding, K. (forthcoming).
Never let me go: Social and Introspective Play. In A. Waern & A. S. Løvlie (Eds.), Hybrid Museum Experiences: Theory and Design. Amsterdam University Press.

2. Related Work

The purpose of this chapter is to contextualise my research. What I present here is work within HCI, interaction design and game studies with which my own work is in dialogue. I start by introducing the paradigm shift that has taken place within HCI in recent years, which has opened the way for research such as mine to start being accepted into the field. I continue by introducing three areas of study within the field of design, all of which include theoretical perspectives and methodologies that I build upon in my own work, namely *critical design*, *affective design* and *play design*. Finally, I describe how these perspectives and methodologies have inspired HCI researchers and experience designers working with hybrid museum experiences. Along the way, I indicate how my own PhD research has emerged out of the various strands of design work discussed.

2.1 The Third Paradigm of HCI

HCI is a field of study that came out of the 1980s and the birth of personal computing, incorporating aspects of several existing disciplines such as computer science, cognitive science and human factors engineering. These roots in engineering and later cognitive science would set the foundation for what are now often referred to as the first and second waves (or paradigms) of HCI (Bødker, 2006; Harrison et al., 2007, 2011).

HCI started with a focus on desktop computers, information-processing and work-related problems. It evolved over the years, and around the turn of the century new methods, models and approaches started to emerge that did not appear to fit, or were even in direct opposition to, what had been the standard practices of the field. The new models included participatory design, value-sensitive design, user experience design, ethnomethodology, embodied interaction, interaction analysis, and critical design. This development marked a shift from problem-fixing to acknowledging that technology was increasingly having an impact on our daily lives and on our relationships both with ourselves and each other.

It is within this ‘third wave’ of HCI that I situate my own work. The third wave is described by Susanne Bødker as related to “nonwork, non-purposeful, non-rational” interactions, concerned with culture, aesthetics, emotions, and a pragmatic approach to experience (2006, pp. 1–2). It is part of a turning towards the humanities within HCI (Bardzell & Bardzell, 2016). In more detail, Harrison, Tatar & Sengers (2007) describe the third wave as a new paradigm in HCI which unites a number of epistemological tenets:

First of all, the construction of meaning is considered to be a situational and dynamic process taking place as people interact with each other and their environment (Suchman, 1987). A key understanding here is how context is seen, not as stable units of information, but as dynamic properties which arise from activity (Dourish, 2004). This calls for design practices which embrace ambiguity in the form of intimate, implicit, serendipitous, and playful aspects of user experience (Gaver, 2002; Gaver et al., 2003).

Knowledge is seen along the lines of what Donna Haraway (1988) calls *situated knowledges* where people's understanding of themselves and the world is dependent on their varying physical and social situations. This affects the view of the user but also of the researcher. Multiple interpretations which come together to describe a situation under study are therefore seen as more valuable than a single 'objective' description (Sengers & Gaver, 2006).

Moreover, by stepping away from the idea that systems can be measured in a way that is universally valid, the question of values comes to the surface (Friedman, 1997). This throws new light on success criteria and the context of design which together make room for more reflective and critical practices on the part of researchers.

Lastly, and in the same vein, theory is seen as an important resource for making sense of what is happening at the site of interaction. However, due to the importance put on the situatedness of knowledge production, theory is also recognized as having limitations.

2.2 Articulating Problems and Making Trouble: Critical Design

Around the same time as the third wave started to emerge within HCI, interaction designers began to use design, not just as an aspect of problem-solving, but as a way to share a critical perspective or to inspire debate. 'Critical design' as coined by Anthony Dunne and Fiona Raby (2001) could be described as more of an attitude and a position, rather than a specific method. According to Dunne and Raby, critical design is about asking carefully crafted questions and provoking reflection; something which they emphasis is just as important as problem-solving (2001, p. 58). Often through the use of design fiction and speculative design proposals, critical design foregrounds alternative social, cultural, technical or economic values, in a striving to challenge norms and dominant worldviews.

Critical design has affinities with some of the creative critical practices developed by artists and activists around the same time. One example of these is ‘tactical media’, a form of media activism with roots in various art movements which uses technology to produce artifacts, systems and events that critique contemporary society. Tactical media artists/activists not only subvert existing forms of digital media, they also work with spectacles, such as creating websites satirising the official US president’s website, as a critical method in order to gain attention from the mainstream media (Lovink, 2003). In contrast to critical design, the tactical media approach is overtly political and often confrontational in its agenda. Rita Raley describes its proponents as artists who “engage in a micropolitics of disruption, intervention, and education.” (2009, p. 1).

A radical design practice inspired by both critical design and tactical media is what Carl DiSalvo (2012) calls ‘adversarial design’. Like tactical media, adversarial design is implicitly confrontational and strives to question conventional approaches to political issues. It builds on political theories of *agonism*, which emphasise the affective aspects of political relations and assert that disagreement and confrontation is a necessary part of a democratic system (Mouffe, 2000). According to Disalvo, adversarial design is a way to foreground the rhetorical aspects of design, and by doing so it inevitably converges with certain artistic practices. Of importance here is not whether something is positioned as art or design, but rather *how* design is used in an adversarial manner (DiSalvo, 2012, p. 20).

To approach HCI from the perspective of critical theory has become increasingly common in the last decade or two. For example, Shaowen Bardzell has offered an agenda for Feminist HCI, which is concerned with the “design and evaluation of interactive systems that are imbued with sensitivity to the central commitments of feminism—agency, fulfilment, identity and the self, equity, empowerment, diversity, and social justice” (2010, p. 1301). Ann Light (2011) furthers this thinking and argues for the queering of HCI. She suggests that HCI can begin to tackle inequalities, “not through attempting to co-opt design to particular ends, but by promoting design which is spaceful, oblique and occasionally mischievous” (Light, 2011, p. 431). In a manifesto for Punk HCI, Conor Linehan and Ben Kirman (2014, p. 748) take a stab at mainstream HCI and write:

Lets think about a punk HCI
Small projects, Big ideas and a vow
Use our tools to provoke and protest
And use computers to make futures that are ours

One specific area of design in which the ideas of Dunne, Raby and others have been implemented in ways which relate to my own work (however with distinct differences, which I will elaborate on in the next chapter), is that of *critical games* (Grace, 2014). Game designers working in this context have taken inspiration both from critical design and from Ian Bogost's ideas about 'procedural rhetoric' (2010). This has led to a large variety of games featuring alternative ideas and narratives from those of the mainstream offering. Critical games can be divided into those that employ *social critique* directed outward towards the society and culture in which the games exist (see for example the work of Molleindustria (Pedercini, 2020) or Anna Anthropy (2020)), and *mechanical critique* which is directed inwards at games from the perspective of game makers or players (Grace, 2014, p. 5). From another perspective, Brian Schrank (2014) describes these two categories of games as '*radical political*', *i.e.* games that play with art and politics as well as fictions and everyday life, and '*radical formal*', *i.e.* games in which the flow is broken so that players can have their expectations about game conventions challenged.

2.3 Taking the Emotional Sphere Seriously: Affective Design

Since the early 2000s, affect has been the focus of inquiry in an increasing amount of research conducted within the field of cultural and media studies (Ahmed, 2004; Blackman, 2012; Clough & Halley, 2007; Gregg & Seigworth, 2010; Hillis et al., 2015; Massumi, 2002, 2015; Sedgwick, 2003; Thrift, 2008). Such studies of affect, however, have been far from homogeneous in either their theoretical approaches or epistemological understanding. Work by neuroscientists such as Damasio (1995), Panksepp (1998) and Ledoux (1996) is frequently used to underpin the studies. Equally popular among affect researchers is the work by psychologists Silvan S. Tomkins (1962, 1963) and the psychobiology of basic emotions. In contrast, a strand of affect theory has emerged as a conceptual tool derived from the philosophy of Baruch Spinoza, and his critique of the Cartesian mind-body dualism (Deleuze, 2001; Hardt, 2007; Massumi, 2002). This understanding of affect is related to interdisciplinary movements such as "new materialism" (Bennett, 2010; Braidotti, 2013; Tsing, 2017), as well as a broader academic focus on materiality and relationality, in which the interweaving of the material, the social, the biological and the cultural is of prime importance (Haraway, 2008, 2016; Latour, 2004, 2005).

Similarly to the development within the humanities, affective aspects of interacting and living with digital technologies have become a topic of increasing attention within HCI and interaction design. Here as well, research on affect, emotion and design has gone into a number of different directions with distinctly different theoretical underpinnings and methodological approaches.

Perhaps the best known is a design approach named 'Affective Computing' after a ground-breaking book by Rosalind Picard (1997). Picard treats emotional processes from a biological point of view. By Affective Computing she means computing that relates to, arises from, or influences the emotions (Picard, 1997, p. 1). The machine should identify human emotional states and adapt its behaviour to them, giving an appropriate response to those emotions. Methods used in this approach are quantitative and include the use of sensors which capture data about the user's physical state, for example by recording facial expressions, body postures, and gestures.

As a reaction to Affective Computing, a design approach called 'Affective Interaction' has emerged, which takes its inspiration mainly from sociology. Affective interaction draws upon phenomenology and sees emotion as something constructed in the interactions between people and between people and machines (Boehner et al., 2005, 2007; Gaver, 2009; Höök, 2006; Höök et al., 2008; Sundström et al., 2007). This approach, which is the one I follow in my own methodological approach, relies on qualitative methods such as interviews, self-reporting of emotional states (Isbister et al., 2006), or cued-recall – a form of situated recall to elicit information about user affect during the use of a system (Bentley et al., 2005).

Another prominent line of inquiry within design, which can be related to affect and which also inspires my own work, is experience-centred design (Wright et al., 2008). Here interactions with technology are conceptualized as *aesthetic experience*. This means that the idea that emotions can be separated from the overall interaction is rejected. Instead, emotions are seen as part of a larger whole of experience (Gaver, 2009; McCarthy & Wright, 2007; Norman, 2004). Drawing on American pragmatist John Dewey (1932/2005), McCarthy and Wright (2007; 2008) view aesthetic experience in terms of three themes: First of all, it involves a *holistic* approach to experience wherein the intellectual, sensual, and emotional are equally important. Secondly, it is based on the notion that in every situation, histories of personal and cultural meanings and anticipated futures are always present, and it is these which complete our experience through acts of *continuous sense-making*. Lastly, a *relational* or *dialogical* approach is taken, wherein self, object, and setting are actively constructed as separate "centres of value" with different perspectives and voices. This means that nothing which is designed and produced can ever be fully finalized, because the experience of it is first completed in dialogue with these different centres of value.

As part of this experience-centred design approach, a number of interesting studies have been carried out in order to research how interactive technologies can express, share and communicate intimacy. Technologies for mediating intimacy can be categorised into two groups: a) those which mediate intimate expressions and b) those which evoke intimate reactions (Gaver, 2009). In the first case, technologies are used to reproduce intimate actions or situations (Counts & Fellheimer, 2004; Goodman & Misilim, 2003; Markopoulos et al., 2004; Mueller et al., 2005) and in the second, the technologies rely on material and abstract representations, such as a feather, a pillow or a bed, as a way to elicit feelings of intimacy between family members, romantic partners, friends or even complete strangers (Chang et al., 2001; B. Gaver & Strong, 1996; Schiphorst et al., 2007; Tollmar et al., 2000).

When it comes to design strategies related to mediating intimacy, approaches that utilize the expressive, evocative and poetic capacities of electronic media are often argued for (Gaver & Strong, 1996; Grivas, 2006). However, contrary to the aesthetically rich approaches employed by for example Jayne Wallace and others (McCarthy et al., 2006; Wallace et al., 2012), it has also proven effective to build on the culturally and socially embedded nature of communication even in the case of extremely minimalist design. As Joseph 'Jofish' Kaye puts it, "a single bit of communication can leverage an enormous amount of social, cultural and emotional capital, giving it a significance far greater than its bandwidth would seem to suggest" (2006, p. 367). Here, it is precisely the constrained nature of the communication which provides space for complex and evocative interpretations based on intimacy. For example, in Kaye's work, the colour of a small circle would take on many different meanings as it was used by couples in a long-distance relationship to communicate with each other. This shows the potential in designing for intimate experiences which rely on the richness of a relationship, rather than on content or visual appeal, which is something I directly build upon in my own design practice.

I also follow the call by Jocelyn Spence (2016), in her work on performative experience design (PED), where she argues for the incorporation of performance theory in HCI as a way to support designers who work with affective and intimate experiences. She points to the rich amount of knowledge and methods which performance artists and theorists have gathered over the years, which can contribute to the interaction design community.

2.3.1 Affective Interaction Design for a Changing World

Within recent years, there has been an increase of interest within HCI and interaction design in what can be called 'entanglement theories' (Orlikowski, 2010). These theories include actor-network theory (Latour, 2005), post-phenomenology (Rosenberger & Verbeek, 2017), object-oriented ontology (Bogost, 2012), agential realism (Barad, 2007) and the above-mentioned affect theory derived from Spinoza (Massumi, 2002). What these theories share (although in different versions) is an understanding that the social and the material realms are interdependent and that consequently any attempt to study humans or technology in separation is flawed. Christopher Frauenberger (2019) argues that bringing these perspectives into HCI and interaction design is a productive (and perhaps unavoidable) way for these fields to evolve in response to a changing world.

In a similar vein, Arturo Escobar (2018) highlights the problems of the dominant dualist ontologies and how these blind us to our ecological embeddedness. He explores alternative notions of design with the aim of reinstituting an ethics of respect and responsibility and so fostering embodied forms of reflection and ecological understanding.

Sharing these concerns, Jonas Fritsch (2018) proposes 'Affective Interaction Design' as a research agenda which puts particular emphasis on how a broadened understanding of affect is necessary to better address affectively charged and uncertain situations characteristic of the politically and environmentally turbulent times in which we live. In this sense, what we have here is an approach to design which encompasses both the affective (from a Spinozan perspective) and the critical. This combination is what attracts me and is something I have drawn from a great deal in my current research.

2.4 Making Use of the Magic Circle: Play Design

Within HCI, interest in taking a ludic approach to design and technology is growing and has manifested itself in the founding of the ACM CHI-Play conference in 2014, which engaged a vibrant community of researchers devoted to games- and play-specific HCI concerns.

Design for play can be divided into design for digital games and design of open-ended forms of technologically-enhanced play. The latter category (in which I position my own work) includes 'gamification' – a design strategy in which game design elements are used for productive purposes in non-game contexts (Deterding et al., 2011). Gamification has been criticised on the grounds of reducing users' internal motivation and as an alternative the concept of 'playification' has been proposed (Márquez Segura et al., 2016; Nicholson, 2012). The idea here is to use *play elements* (rather than game elements) in non-play contexts.

To get an overview of all the possible elements which may constitute a playful experience, designers can turn to the 'Playful Experience framework' (PLEX); a list of 22 elements compiled by Arrasvuori et al. (2010). It builds on previously published work by Costello and Edmonds (2007), Korhonen et al. (2009) and others. The purpose of PLEX is to guide designers into taking advantage of the wide range of possible experiences which players value – ranging from the expected experiences of thrill, stimulation and exploration to less often articulated play elements such as cruelty and suffering.

In contrast to gamification, so-called 'ludic design' is not aimed at pushing a specific agenda, but at fostering playful and open-ended engagements with artefacts (Gaver et al., 2004). Gaver et al. (2003) have shown how ambiguity is a great resource for design when the objective is playfulness, rather than purposeful and structured engagement. Gaver (2009; Gaver, 2002) took this further into what he called "Designing for homo ludens" – a design strategy intended to foster playful and curiosity-driven engagement. This strategy has affinity with Dalsgaard's design considerations for 'inquisitive use' (2008). It also shares concerns with the work by Tieben et al. (2011) on how to elicit curiosity in public spaces through interactive systems.

Building on some of these ideas, de Valk et al. (2012) have put forward a design quality that they call 'open-ended play design', which strives to strike a balance between completely free and tightly constrained play. With open-ended play objects, players are free to create a wide range of games, which emerge in relation to the social properties of the play objects (Bekker et al., 2010). Typically, there are three stages of engagement with these objects, which de Valk et al. (2012) call *invitation, exploration* and *immersion*.

Back et al. (2017) see play design as an alignment process, which is done collectively by designers and players. From their perspective, players contribute to the design process by defining and changing the structures framing play. In this sense, it is not only the rule system and the technology (and the material environment for that matter) which influence how people engage in play, it is just as much the social aspects of the particular situation at hand (Márquez Segura et al., 2013). Back et al. distinguish between four different ways in which players engage with the structures framing play: *conformant play, explorative play, creative play* and *transformative play* (2017, p. 18:9-12). Conformant play is play which stays within the designed structures and follows the designer's intentions. Explorative play is often the result of designs which create ambiguity (Gaver et al., 2003) and open-endedness (Bekker et al., 2010; de Valk et al., 2012). This is play in which players explore the structures framing play. Creative play is also often the consequence of this type of design, but here, by contrast, players move on to invent and socially negotiate their own games. Lastly, transformative or transgressive play is similar to creative play, but goes one step further: now, there is not even any common understanding or agreement among players (or designers) on how the rules of the game are being changed or redefined.

When working with open-ended play as a way to sustain and enhance social co-presence, Isbister et al. (2018) propose that HCI designers turn to the MDA (mechanics/dynamics/aesthetics) framework (Hunicke et al., 2004). This is a framework originally developed as a tool to analyse games. *Mechanics* are the base components of the game: the rules, data structures and algorithms which determine the basic actions which are possible. *Dynamics* describe how the game performs in action, in response to player input and behaviour. *Aesthetics* refer to the emotional responses evoked in the player. The advantage of this framework from a design perspective is that it articulates how the mechanics of a system interact with the players (along with the context, environment and so on), together creating certain dynamics which in their turn lead to particular aesthetic experiences. Isbister et al. emphasise the importance of designing with the dynamics in mind, rather than solely focusing on the mechanics (as often happens in HCI).

With a particular focus on playful engagement that emerges as part of daily activities which are outside of leisure, Altarriba Bertran et al. (2020) propose a ‘bridging concept’ (Dalsgaard & Dindler, 2014) which they call ‘Technology for Situated and Emergent Play’. The purpose is to show how play within an everyday context can positively impact players both socially and emotionally. By analysing a number of design exemplars they identify five design qualities which can help to bring out playfulness in these everyday situations:

1. The designs should invite explorative and creative play through the use of play elements, rather than of traditional game elements such as goals, points etc.
2. The play technology should be embedded in places or situations not usually associated with play, such as an office space or the dinner table.
3. The designs should provide a variety of playful interactions in order to diversify the play experience.
4. The designs should make use of ambiguous interfaces in order to invite exploration.
5. The designs should use oddity or spontaneous moments of disruption (such as a sudden strange sound) in order to evoke curiosity.

Altarriba Bertran et al. (2020) argue that the advantages of these design elements are that they add joy to mundane situations, afford agency to explore, create and reflect, and also facilitate meaningful social connections.

2.4.1 Critical Potential at the Edge of the Magic Circle

Pervasive games signify games which deliberately blur or redefine the traditional boundaries of a game (Magerkurth et al., 2005; Montola, 2005). They do this through engaging with (or ‘playing with’) the ‘real’ world, in one way or the other, often relying on pervasive, ubiquitous and mobile technologies. Genres of pervasive games include alternate reality games, urban games, location-based mobile games, and hybrid (or mixed) reality games (de Souza e Silva & Sutko, 2009; Montola, 2005).

Markus Montola (2005) describe pervasive games as spatially, temporally and socially expanded. This means that play can take place in real-world and virtual environments simultaneously. Moreover, the usual temporary and episodic quality of play no longer applies, as the games can go on for long periods of time, in more or less active states. Players are in fact not always aware whether they are playing or not, as these games can fall into the background during everyday activities, only to make themself known at a later moment. Pervasive games which are extended socially make use of outsiders such as observers or by-standers, often without their knowledge or consent. This is most often done discretely, so as not to disturb, but can also be done in more disruptive (and controversial) ways (see *reality games*, Montola, 2005).

One interesting core gameplay mechanics which Jane McGonigal highlights in her study of alternative reality games, is what she calls 'affordance hunting': the discovery and engagement of a series of secret affordances (1999, p. 284). For players this resulted in "the tendency to treat everything and everyone in the environment as potentially useful" (ibid, p. 74). This could be described as seeing the world "with new eyes" as players start looking for visual patterns or clues, as well as interpreting their environment (including people around them) through the lens of the game narrative.

It is not hard to see how pervasive games lead to players having to negotiate the dynamics of game and ordinary life. Cindy Poremba talks about 'brink games', a range of games (analogue as well as digital) which deliberately play with "the contested space at the boundary of games and life" (2007, p. 772). As an example, she brings up *Twister* (Hasbro) because of how this well-known and loved game allows for a temporary redefinition of the rules of social distancing in favour of greater intimacy. Poremba also draws on Niklas Luhmann's work on functional systems theory in order to tease out the critical potential of play which explores the fringe of the 'magic circle'. From this perspective, when play takes place in an environment which is constantly challenging its existence, it forces participants to experience a 'second order observation' (Luhmann, 2012) of the boundaries between inside and outside, game and life. This may lead to players becoming acutely aware of social norms and conventions as well as of legal boundaries, as they are dependent on them when navigating the play situation. This temporary 'brink awareness' invites players both to reflect on their situation and to explore personal, social and cultural boundaries in a hands-on manner. This is something which has become a key part of my own design practice.

2.5 Critical, Affective and Playful approaches to Hybrid Museum Experiences

I turn now to the question of how the different fields of study which I have presented so far, have been manifested in relation to museums.

Early technological interventions in museums were often aimed at extending the interactivity of the traditional audio guide. This focus on the role of the guide led to a large part of HCI research in museums being preoccupied with digital information delivery to visitors (Hatala & Wakkary, 2005; Petrelli & Not, 2005; Stock et al., 2007; Vlahakis et al., 2003). In more recent years, however, HCI researchers have focused more on the social, affective and playful aspects of the museum visit. This is the approach which I follow in my own work.

Hybrid designs (Bannon et al., 2005) which take advantage of affordances of digital technologies, in combination with the user's embodied and social presence in the museum or heritage site, have been explored by HCI researchers in order to foster visitor engagement, participation and play (Ciolfi et al., 2008; Cosley et al., 2008, 2009; Taylor et al., 2015; Yiannoutsou et al., 2009). Marshall et al., for example, have experimented with objects that beg passing visitors to be put them on display (2015) or which guide visitors through the museum according to the perspective of their choice (2016). In a similar manner, Darzentas et al. (2018) have worked with objects that allow visitors to tell their own stories about them on augmented reality-enabled tablets.

Work has also been done particularly on how to enhance the social interactions between visitors who come in groups (Eklund, 2020; Fosh et al., 2015; Hillman & Weilenmann, 2015; Rennick-Egglestone et al., 2016; Tolmie et al., 2014). As part of this move towards designing for 'interpersonalisation' (Eklund, 2020), rather than personalisation, the practice of *gifting* has been used as a way of mediating intimacy and to enrich the personal and social aspects of a museum visit (Fosh et al., 2014; Spence et al., 2019).

When it comes to focusing on the emotional and sensory aspects of a museum experience, we have designs such as "See Me, Feel Me, Touch Me, Hear Me" in which a visit to a sculpture park was emotionally enhanced through the design of a trajectory through each sculpture, combining textual and audio instructions to drive directed viewing, movement and touching (Fosh et al., 2013). In a similar vein, Hazzard et al. (2015) have explored using a soundtrack in order to enhance the emotional and narrative aspects of a sculpture park visit. A different approach was taken by Boehner et al. (2006) who explored the use of ambient displays in a museum to augment experiences of affective presence.

Hybrid games for museums often fall under the category of the scavenger hunt, where players follow clues and solve puzzles inside the museum (Avouris & Yiannoutsou, 2012). A popular example is The Murder at the Met Scavenger Hunt at the Metropolitan Museum of Art in New York (Kim, 2015). Vayanou et al. (2019) have taken a different approach by exploring generic storytelling games for art museums inspired by popular board games such as *Dixit* (Libellud) and *Once Upon A time* (Atlas Games). More open-ended play technologies for museums include "ec(h)o", an interactive 'tangible audio guide' which Wakkary et al. (2007) used to explore situated play at the Canadian Museum of Nature.

Over the last 25 years, British artist group Blast Theory have created several interesting contributions by exploring the intersection of art, performance and pervasive games in a variety of museum and heritage settings. One example is "Ghostwriter" which was commissioned for the Royal Albert Memorial Museum in Exeter (Blast Theory, 2011). In this piece, visitors would ring in and hear a woman, whose voice would gently draw them into the museum. They could interact with her or they could make a recording of their own about an object that resonated with them.

As part of a recent 'immersive turn' within museum and heritage contexts (Kidd, 2018), other artist groups have followed Blast Theory's lead and created works which in a similar manner make use of evocative narratives and interactivity. These include "A Hollow Body" developed by artist group Circumstance for the Museum of London (2014), "Traces" which takes place at St Fagans National Museum of History, near Cardiff in Wales (yellow brick, 2017), and "Nightwatchers" developed for The Tower of London (Anagram, 2015).

Jenny Kidd (2018) argues that playful and immersive heritage encounters "can be a way of asking difficult questions and offering provocations on the very nature of museum-making". However, not a great deal of work has yet been done when it comes to playful or immersive designs (or any hybrid designs for that matter) which take a critical approach to the museums themselves. One interesting example though, is "Art Heist" – an interactive narrative piece that was developed by artist collective Coney for The New Art Gallery, Walsall, in 2010. In this role-playing game, the participants plan and carry out an art theft at the gallery. According to one of the organisers, "Art Heist uses the transgressive qualities of art theft and the excitement of breaking into a gallery while posing its audience big questions about art: who is it for, who decides what's good, why is it valuable and does the value of the art lie in the idea or in the object?" (Mees, 2011). Another good example is "I Swear to Tell the Truth" which was designed to accompany the "Syria: A Conflict Explored" exhibition at Imperial War Museum North, Manchester (Anagram, 2017). Taking place in an adjacent permanent gallery space, dominated by stories of twentieth century conflict, the experience was designed to encourage participants to reflect on the IWM museum itself, and to raise questions about war, representation, and the circulation of information. In this sense, it deliberately worked to question the truth claims that museums often make (Kidd, 2018). What these two examples show is how a critical play design can put participants in the position of having to negotiate the boundaries between games and life, and how this can help to provoke reflections as well as to intensify their museum experience.

In my contribution to the discourse on hybrid museum experiences, I build on this type of critical, immersive and evocative work. However, instead of working with strong narratives, which is the common strategy here, I take another approach, which is building more on insights drawn from play design and games, as well as 'interpersonalisation' and the mediation of intimacy. My aim is to show that an affective critical play design can be used to provoke and to intensify in ways that let players control their own level of engagement. This enables playful critical interventions to be incorporated into 'normal' visits to the museum, and in this sense to work as discreet acts of deviation, while still harbouring transformative potential.

3. The Theory of Affective Critical Play

My aim with this chapter is to trace the evolution of my concept of *affective critical play*, and also to offer a theoretical framework for other game designers who wish to engage with *play* as a critical practice.

I begin with my own conceptualization of affective critical play, and continue with a discussion of the different theories which set the foundation for this work, including general theories of play. I elaborate particularly on the role of *ambiguity* and *performance* in play, as well as highlighting its *relational* aspects. I develop these perspectives with the help of affect theory and particularly the notion of *affect as a mutable relational and transindividual force*. Here I introduce *intimacy* as a modulator of affect, and I elaborate on play as a relational technique which lets us explore our capacity for resistance. I turn next to theories of *performativity* and the understanding that our world is shaped and constructed by performative acts, as are our very identities. I conclude with an overview of game scholar and artist Mary Flanagan's concept of *critical play* which finally brings us back to my extension of it in the form of *affective critical play*.

3.1 What is Affective Critical Play?

What I put forward here as 'affective critical play' builds on the firm foundation of Flanagan's concept of 'critical play' (2009). However, my interest in the concept of critical play is mainly from the perspective of it as *artistic critique* (Bishop, 2012). This means that my focus is not on games as systems of representation, but rather on play which *challenges power, identity, social norms and cultural conventions* (Agamben, 2007; Sicart, 2014; Sutton-Smith & Kelly-Byrne, 1987). In Caillois' (2001) terms, this means that I put emphasis on *paidea,* which is creative and spontaneous play, rather than *ludus,* which is its competitive and rule-bound counterpart. I draw on the notion that identity, agency, categorial boundaries and power relations are not fixed nor stable but rather *enacted* and therefore can be played with and eventually transformed (Barad, 2003; Butler, 1993, 1999; Nippert-Eng, 2005). Therefore *ambiguity* and *emergence* are key components in affective critical play, in meaning as well as in actions (W. Gaver et al., 2003; Kozel, 2012). It can be described as a form of 'worlding', which according to Helen Palmer and Vicky Hunter (2018) is,

> A turning of attention to a certain experience, place or encounter and our active engagement with the materiality and context in which events and interactions occur. It is above all an embodied and enacted process – a way of being in the world - consisting of an individual's whole-person act of attending to the world.

Furthermore, by building on the concept of *intimacy* as a relational quality which entails a significant degree of exposure to another living or non-living body (Berlant, 2000; Sadowski, 2016), I put forward affective critical play as a process of what Donna Haraway (2016) calls 'sympoiesis', or *worlding-with*. This means that affective critical play entails intimacy, not just in relation to other players, but just as much to ourselves, our bodies, our emotions and to the material world around us. From the perspective of affect theory, this can be described as becoming acutely aware of the affective or *in-between* dimension of experience (Massumi, 2002, 2015). Affective critical play is a practical way of playfully exploring the possibilities for *resistance* as well as *submission* arising in each encounter (material as well as abstract). This means that it gives us access to more potential, at least temporarily, and thus expands our "margin of manoeuvrability" (Massumi, 2015, p. 3). In this sense, affective critical play can be likened to what Haraway describes as "those forms of activity that are not caught by functionality, those which propose the possible-but-not-yet, or that which is not-yet but still open" (2019). This is key for the understanding of play as an affective critical practice with transformative potentials.

3.2 Play

Play is a fundamental part of being in the world. Play is often frivolous – something we do simply to have fun together. It can also be a serious and transgressive activity. We play with things such as toys and games. We also play with technology, with identity and with violence. In this sense, play is full of paradoxes, so it is not surprising that scholars have long struggled to fully understand and define what they mean by the concept of 'play'. In

Homo Ludens, a foundational work on play and culture, Johan Huizinga defined play in the following way:

> Summing up the formal characteristics of play, we might call it a free activity standing quite consciously outside 'ordinary' life as being 'not serious', but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the common world by disguise or other means (1938/1998, p. 13).

Building on Huizinga's work, Roger Caillois (1961/2001) argues that play can best be described by the following six core characteristics: It is free or voluntary, separate from the routine of life, uncertain, unproductive, governed by rules that suspend ordinary laws and behaviours, and involves imagined realities that may be set against 'real life'. Caillois also makes a distinction between rule-bound competitive play (*ludus*), and unstructured and spontaneous play (*paidea*). This is important, because it points to a fundamental paradox of play, namely how it is simultaneously *orderly* and *disorderly* (Henricks, 2009). Play often relies on shared agreements about rules, goals, and environmental boundaries (as in games). At the same time, play invites spontaneity and creativity, which means it has a disrespectful (or as Miguel Sicart puts it "carnivalesque") relationship to these rules (Bakhtin, 1984; Sicart, 2014, p. 11). Hence, play always exists in a tension between orderly and disorderly tendencies.

3.1.1 Different Ways to Frame Play

In an attempt to draw attention to how the study of play is affected by broader systems of value, Brian Sutton-Smith (2001) highlights seven 'rhetorics' of play. These are, 1) *Play as progress*: a rhetoric which focuses on the developmental aspects of play and on the notion that children learn through play. 2) *Play as fate*: this refers to games of chance and gambling, and rests on the assumption that human lives are controlled by destiny. 3) *Play as power*: a rhetoric associated with sports and contests, which Sutton-Smith suggests is an ancient rhetoric, as old as patriarchy. 4) *Play as identity (community)*: From this perspective, play is viewed as a means of constructing and confirming social identities through community celebrations and festivals. 5) *Play as imaginary*: This rhetoric relates to the imagination, creativity and innovation. 6) *Play as the self*: This usually refers to individual playful pursuits and hobbies, where play is seen as a form of relaxation and escape from everyday life. 7) *Play as frivolous*: This rhetoric is associated with activities of the figures of tricksters and fools; it refers to the activities of people who playfully make fun of the social and cultural order of everyday life.

Different scholars tend to highlight different aspects of play, depending on which of these seven rhetorics they engage with. This sometimes leads to misunderstandings and tensions when different rhetorics are compared with each other in discussions on play. My own perspective of play is mainly coloured by the rhetorics of play as *imaginary* and as *frivolous,* and in this sense I differ from many design researchers who work with museums, as the prevalent play rhetoric in this context tend to be play as *progress* (Hein, 1998, 2006).

3.1.2 The Magic Circle of Play

Play can happen anywhere; it does not need fancy playgrounds or big sports arenas. However, without the protection of a physical space dedicated to play, it is a rather fragile activity. For play to be sustained it needs to be bounded, both mentally and socially. The psychological border of play is experienced as a “protective frame which stands between you and the ‘real’ world” (Apter, 1991, p. 15). Different people have differing interpretations of playful situations, because the ways we experience them are fundamentally personal. In general, however, we need to mentally construct some form of protective frame in order to feel safe enough to enter into play.

When there is more than one person engaged in a playful activity, a social contract is usually established between the participants. According to Jaakko Stenros (2012), this unwritten contract is what creates the so-called ‘magic circle of play’ inside which “special rules obtain” (Huizinga, 1938/1998, p. 10). This is a way to socially deal with the potential confusion, awkwardness or “danger” of play (Schechner, 1988) and to establish trust. It does not, however, mean that the social contract is something fixed or stable. On the contrary, it is often played with in different ways, renegotiated or reinterpreted during play (c.f. Wilson, 2011).

3.1.3 Ambiguity in Play

The boundedness of play also serves another important function. It enables the "play of meaning" (Salen & Zimmerman, 2004) that occurs during play. In play, different "layers of meanings" (Fine, 1983) are being generated, foregrounded or even consciously ignored. As Ervin Goffman states, "games place a 'frame' around a spate of immediate events, determining the type of 'sense' that will be accorded everything within the frame" (1961, p. 20). Important to point out, though, is that when we interpret signs within a system (such as during play), certain layers of meaning may fade into the background, but without ever completely disappearing (Barthes, 1972, p. 117). Layers of meaning that are generated through play are constantly being either foregrounded or backgrounded by layers of meaning generated by real-world constraints (such as the social and material contexts). In this sense, play generates temporary worlds in which meaning becomes highly ambiguous and emergent (this is a shoe, but now it is also a boat!). In other words, a *defamiliarization* (Crawford, 1984) from our surroundings and ourselves takes place as we play.

However, not only does play generate ambiguity, elements of ambiguity are also important to spark the playful mindset and to encourage curiosity and exploration (c.f. Gaver et al., 2003). This includes the opportunity to explore emergence in meaning. However, play equally provides a space within which ambiguities in material constraints, bodily expressions and social roles can be explored through *performance*.

3.1.4 Performance in Play

In play, different forms of performance take place. We might perhaps think of performance in play as similar to how athletes perform during a sports event – a goal-oriented activity through which players strive to win. There is, however, performance in play which is more related to an aesthetic context.

In a similar way to how art performances (as in action art or performance art) work to disrupt the mundane, play too has the power to temporarily interrupt ordinary life. This liminal quality of play (or 'liminoid' as Turner would prefer (1974)), protected by the magic circle as it is, opens up for ways of "transforming what has been ordinary into components of aesthetic experience" (Fischer-Lichte, 2008, p. 168).

From this perspective, there are two types of performance in play that are relevant. Firstly, performance in play can be a form of *reflexive action*, which refers to how one becomes acutely aware of one's actions as they are in progress (Kozel, 2008, pp. 68–69). This can happen spontaneously as we notice that we are being watched (especially if there is an observer who is not part of the play). Moreover, being attentive of one's own and other players' actions can be part of the dynamics of a certain type of play – whether induced by the rules of play or by the social contract between the players. This heightened awareness of actions and expressions provide the opportunity for players to *knowingly* explore personal, social, cultural as well as material boundaries as they play.

Secondly, performance in play can be related to the type of performance that Susan Kozel describes as *emergence* – that which "occurs out of the fissures in habit and codified behaviour" (Kozel, 2012, p. 75). In play, actions that we did not know we were capable of, can suddenly become possible. For a limited period of time, we have the alibi to explore what it is like to be different. This means that interactions can take place between "situational" versions of ourselves (even ways of being we have no words for) and more general understandings of who we are based on our identity (Henricks, 2015, p. 83). This is echoed by Susanna Paasonen when she states that all kinds of play "entail an openness of becoming" (2018, p. 133).

Seen from this perspective, performance in play can both be a conscious and a pre/non-conscious exploration of the fundamental conditions of embodiment. This is something which becomes most prominent in play in which significant *world-shaping relations* are put into motion – this includes relations to our bodies and personal identities as well as to larger systems of ideology and culture.

3.1.5 Relational Play

Henrick describes play as a process of recognizing and responding to different "fields of relationships": the physical environment, the body, the mind or psyche, the social or society, as well as culture (2015b, pp. 71–73). Moreover, Sicart (2020) describes the world-making in play as a consequence of relations established between players, play technologies and context (in other words the different fields of relationships just mentioned). This points to *relationality* as a key element in play.

This relational aspect of play can be found in the work of Christena Nippert-Eng (2005) and her concept of 'boundary play'. This is play which involves the imaginative manipulation of the classificatory boundary between two related cultural-cognitive categories. This could for example be the play with dichotomies such as inside-outside, powerless-powerful, private-public, producer-consumer, masculine-feminine, and real-pretend. Not only does this lead to a heightened attention around one's own actions (as in reflexive action), it may equally lead to emergence in the form of novel expressions and new social practices. However, boundary play only becomes meaningful and exciting when the players *share* a cultural understanding of the categories which are in play, as well as the location of the normal boundary between them. In this sense, boundary play plays with culture for those already initiated (or in the process of becoming initiated). Moreover, it might sound like an innocent behaviour, and in most cases it is; it can, however, depending on the circumstances, be a rather dangerous activity. As Nippert-Eng puts it,

> Bending or redrawing the line between classificatory categories is some of the most dangerous activity that humans can engage in. The edges of categories and the relationships between them are the backbone of a culture. Religions are founded, wars are fought, personal identities are forged on, and everyday life is lived over and through these very things. (2005, p. 308)

Nipper-Eng here points to the *subversive* power which lies within play in its capacity to put relations into motion.

3.2 Affect as a Relational Life-force

In my work, I have found the Spinozan strand of affect theory to be the most useful. The reason for this is that my interest does not lie in emotions *per se*, nor in categorising them, but rather in unfolding the *relational* aspects of play. In Spinoza's philosophy, affects are vital forces by which the organism strives to act against other forces which act on it and continually resist it or hold it in check (Kisner, 2013). Living bodies are in this way influenced, moulded, and changed during encounters with other bodies. The ability *to affect and to be affected* is something all living bodies share, however to what degree they do this is constantly fluctuating.

In his endeavour to conceptualize affect and the politics of affect, Brian Massumi (2002, 2015) draws on Spinoza as well as on work by philosophers such as A. N. Whitehead, Charles Sanders Peirce, Henri Bergson, Gilbert Simondon, Gilles Deleuze, Félix Guattari and William James. According to Massuni, affect is part of the pre/non-conscious dimensions of experience and is felt as transitions in our capacity to act. Some flows of affect strengthen our ability to affect and be affected, as a positive feedback loop. Others lead to the inability to act or be acted upon. Because of the rich and flowing processes which are involved here, Massumi argues (as did Deleuze and others) that affective intensities cannot simply be pinned down or easily reduced to conventional emotions. Instead, they should be understood as more complex ebbs and flows that propel us forward (or hold us back) in our everyday lives.

From this perspective, affect should neither be seen as purely natural/physiological, nor solely cultural. Bodies, Massumi says, always find themselves affected by fields of forces; forces of ideology, techniques and practice, pushing and pulling them in different directions. However, this does not mean that we are passive ragdolls being continually tossed around by forces out of our control. On the contrary, following a Foucauldian understanding of power as a relational force, "where the power to affect is strictly coincident with the power to resist" (2015, p. 93), Massumi argues, that in any encounter there is always room for resistance. Affect as a whole, he proposes, is "the virtual co-presence of potentials" (2015, p. 5). There are constraints to what we can do, in terms of biology and physics, as well as in terms of social and cultural norms and conventions. However, we move forward by playing with the constraints, not by avoiding them. This is what makes room for change to take place.

According to Massumi, experiencing the potential for change in every situation, even the most mundane, is essentially about *being attuned to opportunities in movement* – as a surfer rides the flow of a wave. This very immediate realization of what is under way – a form of *enactive* understanding – is what he calls a *thinking-feeling* (2015, p. 94). It is what arises directly from in-between object and subject, and therefore, it is something fundamentally *relational* and *transindividual*. As Massumi explains,

> It pertains directly to what is passing *between* the individuals involved (…) [and] it coincides with a *becoming* of the involved individuals. As an event, it is already carrying each beyond itself, making it other than it is just now, and already more than what it was just then. (ibid, italics in original)

It follows that affective intensities can be modulated (which means that our access to potentials is increased or decreased) through the manipulation of relational contexts.

3.2.1 Intimacy as Modulator of Affective Intensities

The word intimacy generally describes close relations. In fact, it is used to describe a whole range of things happening at the local, micro level, as well as on embodied levels, and on levels that involve the psyche in one way or another (Wilson, 2016, p. 249). Helga Sadowski suggests that in the broadest sense of the term, intimacy describes “a context that is relational, and that this relation affects one’s body and embodied self” (2016, p. 46). From this perspective, intimacy consists of complex relations that go beyond the private sphere (Berlant, 2000).

Following this vein, I regard intimacy as a relational state which involves a significant degree of exposure to another living or non-living body (including bodies of thought, technological objects, bodies of light etc.). An intimate encounter, in this sense, is one in which one body is modified through its encounter with another. As Sadowski puts it, “getting intimate with someone or something means crossing a boundary and connecting with the other, and being at risk of losing oneself to some degree.” (2016, p. 45). From this perspective, intimacy is always affective. The more open and exposed we are in our encounters with other human or non-human bodies, the more intense our life will become. In this sense, intimacy is a relational quality which has a direct effect on our ability to affect and be affected.

3.2.2 Play as a Critical Relational Technique

One shortcoming of affect theory, especially from a design perspective, is that it is rather far removed from actual design practice. Massumi’s work is no exception. At one point he says:

> If we can take little, practical, experimental, strategic measures to expand our emotional register, or limber up our thinking, we can access more of our potential at each step, have more of it actually available. Having more potentials available intensifies our life (2015, pp. 5–6).

However, he does not go into detail as to what these measures entail. Interestingly though, at another time he says,

> There are relational techniques that can be practiced to modulate unfolding events in a way that takes off from the primary capacity of resistance implied in a Spinozist concept of affect, and have the potential of reorienting tendencies towards different ends, without predesignating exactly what they are. Tendencies are oriented, but open-ended. (2015, p. 97)

This description of an “open-ended reorientation” of events which explore our “capacity of resistance”, does indeed sound much like aspects of play which I have sought to describe in this chapter. I therefore propose that my concept of affective critical play can be seen as an extension of Massumi’s line of inquiry; a practical relational technique which lets participants become attuned to the *in-between* (that which is passing between human and non-human bodies) and to opportunities in movement (such as resistance). Moreover, as players in this way become exposed to the emergent and the unexpected (in meaning and in action), transformation is made possible (Gordon, 2008).

3.3 Performativity and Enacted Critique

The term ‘performativity’ was originally coined by John L. Austin (1975), a philosopher of language. He used the term ‘performative utterances’ to define a form of speech that, rather than simply describing reality, functions as a social action to change reality. A familiar example is the utterance “I do” during a wedding ceremony. According to Austin, these speech acts are self-referential, which means that they do not refer to any pre-existing conditions. Instead, they are *constituting reality*.

By building on Derrida and Foucault, among others, Butler (1990, 1993, 1999) has brought the concept of performativity to the body. Her main interest has been to show how gender identity is constructed and shaped in our everyday lives through a continuous repetition of bodily acts. According to her, “the body is not merely matter but a continual and incessant *materializing* of possibilities” (Butler, 1990, p. 272). Here she draws on Merleau-Ponty and his notion that that the body is a repertoire of infinite possibilities. Culture and history are embodied through an active process, which in its turn generates the identity of the culturally and historically marked body. This takes place "under and through constraint, under and through the force of prohibition and taboo" (Butler, 1993, p. 60). However, according to Butler, to perform one's gender should not be understood only as a means to submit oneself to cultural and social norms and expectations, rather it is through this process that we make ourselves intelligible to others. To act according to norm is to be understood, to be accepted and to be deemed unproblematic. But even if strong social and cultural conventions exist, we have the agency to deviate from dominant norms, as the performances we carry out in our everyday life are not fully determined (Butler, 1993, p. 176). In the reiteration of cultural scripts, re-enactments always differ from the norm and from one another to some degree, therefore there is always a possibility of transformation, however small it may be.

3.3.1 Play as Enacted Critique

One way to deliberately resist dominant norms is through what Butler calls 'enacted critique'. Here she gives the performance of a drag artist as an example, as it "imitates the imitative structure of gender", and by so doing, it is "revealing gender itself to be an imitation" (1997, p. 145). The problem here is of course if this re-enactment of gender becomes a spectacle, an anomaly taking place on a stage and therefore able to be watched and judged from a safe distance, rather than a practice which is more integrated into the everyday. Nevertheless, drag can be many things; a queer cultural expression, a community, a lifestyle. Interestingly, it is also a form of *play* with both mimetic as well as generative capabilities. Therefore, it is from the perspective of play that I wish to extend Butler's work in this area.

In play, everyday performative repetitions can be disrupted and, in this sense, play works in the opposite way from Butler's notion of performativity. However, this does not mean that acts of play are not repetitive at times, nor that they are not governed by norms (as they often are), but rather that actions in play are *equally* open to variation, improvisation and change (Paasonen, 2018). It is because of this special and multi-faceted capacity of play that it can function as a form of enacted critique.

Now, in order to go beyond the anthropocentric context of Butler's ideas and to elaborate further on the idea of play as way to explore variation, I here turn to Barad (2003, 2007) and her reworkings of Butler from a posthuman perspective. To Barad, humans are

> beings in their differential becoming, particular material (re)configurings of the world with shifting boundaries and properties that stabilize and destabilize along with specific material changes in what it means to be human (2003, p. 818).

This means that Barad takes Butler's notions of gender and extends it to "humanness" itself. From this perspective, we should not see ourselves (nor the world around us) as representations of pre-established categories, but rather as fluid expressions of "particular relations and qualities that emerge, oscillate, and alter as bodies become animated and differently positioned in their encounters with the world", as Paasonen eloquently puts it (In Press, p. 6).

Building on Butler and Barad, I see affective critical play as a practical technique to deliberately manipulate and *re-enact* significant relations and qualities (such as intimacy, agency and power) in order to (at least temporary) dynamically shift the process of materialization and to make more palpable (in the form of affective intensities and tensions) the ongoing reconfigurings of the world.

3.4 Affective Critical Play as an Extension of Mary Flanagan's Work

To conclude this chapter, I here present Flanagan's concept of critical play as well as my own extension of her work.

3.4.1 Critical Play

Flanagan's concept of critical play has gained a lot of attention from games scholars, educators and designers, since her book on the subject was released in 2009. In it she elaborates on a number of historical artistic play practices and games designed for political, aesthetic, and social critique, from 19th century doll play to modern videogames. She starts out by defining her concept rather broadly (or perhaps extremely broadly) by stating that "critical play means to create or occupy play environments and activities that represent one or more questions about aspects of human life" (2009, p. 6). She continues by describing it as "a careful examination of social, cultural, political, or even personal themes that function as alternatives to popular play spaces” (ibid). In this sense, Flanagan is positioning critical play, both as activity and design space, as an alternative to mainstream games/play and the design thereof. Hence, designing for critical play means engaging with an alternative, avant-garde or even ‘radical’ form of game design (2009, pp. 1–2). In a historical overview, Flanagan shows that this is something that has been done by artists and activists in the past. However, in her book she puts forward critical play as something that should inspire a broader community of designers of today.

3.4.2 Extending Critical Play

One problem with Flanagan’s broad definition of critical play is how it includes contradictory or paradoxical understandings of what critical play is. On the one hand, Flanagan emphasises how critical play is a way to “manifest critical thinking” (2009, p. 3). On the other hand, she presents several examples of games or playful activities designed to move *beyond reason*. These include “‘sense-heightening’ experience[s]” (2009, p. 175) designed and orchestrated by Dadaist, Surrealist or Fluxus artists, among others.

In order to take a closer look at the tensions existing between these two different critical practices – reasoning on the one hand, and performative and affective techniques on the other – I here turn to Clair Bishop and her work on participatory art. In her book *Artificial Hells: Participatory Art and the Politics of Spectatorship* (2012), Bishop highlights Boltanski and Chiapello’s (2005) distinction between *social* and *artistic* critiques of capitalism and relates it to participatory art from the 1920s until today. Her intention is to lay bare the incompatibilities and tensions existing between these two forms of critique (as expressed through art), stemming from how the former is underpinned by morality and the latter by a striving for freedom.

Artistic critique comes out of nineteenth-century bohemianism, and it draws on the Bohemians’ indignation towards capitalism (or the capitalist *bourgeoisie* as the Dadaists would call it). It is concerned on the one hand with disenchantment and inauthenticity, and on the other with oppression. According to Boltanski and Chiapello, artistic critique “foregrounds the loss of meaning and, in particular, the loss of the sense of what is beautiful and valuable, which derives from standardisation and generalised commodification, affecting not only everyday objects but also artworks…and human beings”. (2005, p. 37, in Bishop, 2012, p. 276)

Historically, methods of artistic critique have included the use of humour, mockery and play as artists have sought to provoke the ruling class or to revolt against, for example, oppressive social norms (see Bakhtin, 1984, 2008; Critchley, 2011). By contrast, social critique, which grew out of the Socialist movement of the 1800s, is occupied by issues such as “the ego of private interests, and the growing poverty of the working classes in a society of unprecedented wealth” (Bishop, 2012, p. 276). The fight against social injustice is here the highest priority, and any moral neutrality, individualism or withdrawal from reason is rejected.

In Flanagan’s work, social critique is represented by videogames that directly address social issues through their “representation systems and mechanics” (2009, p. 4). However important and valuable these games are, they make use of an instrumental, conformant (or submissive) form of play in order to communicate their intended critique (Sicart, 2011), something which is notably far from the transgressive and unruly behaviour as well as the absurdities encouraged by the avant-garde art movements to which Flanagan also refers in her book about critical play.

3.4.3 Affective Critical Play

By building on critical play as a form of artistic critique, which strives towards freedom rather than morality, I put forward the concept of affective critical play. The boundedness of play is here used to create an alibi and a safe space to explore meanings and actions that are outside of everyday life and which can transgress social norms, cultural conventions and ideas of who we are and what we can do. By drawing on affect theory derived from the philosophy of Spinoza, affective critical play is conceptualized as a relational technique to experience the potential for change that exists in all encounters as well as the capacity we have for resistance. Because of how it gives players access to more of their potential, affective critical play becomes an amplifier of affect and thus works to intensify any situation in which players engage with it. Furthermore, by building on Butler, Barad and Nipper-Eng, I position affective critical play as an enacted critique in which the instability and fluidity of category boundaries, material properties and social relationships is experienced in a hands-on manner, as is the plasticity of the continual materializing of possibilities which shape who we are.

4. Methodology

In this chapter I give an introduction to Research through Design (RtD). I present my own take on RtD and discuss how a critical/reflective approach is relevant to my work. I continue by giving an overview of my research approach through my research studies and my research process. Finally, I end the chapter with a reflection in which I discuss the technological aspect of my work.

4.1 Asking Questions through Design

A central component in RtD is the carrying out of design experiments. These can take the form of prototyping, sketching, user-tests, etc. (Krogh et al., 2015). According to Zimmerman et al., what is unique to the RtD approach is how it “stresses design artifacts as outcomes that can transform the world from its current state to a preferred state” (2007, p. 1). The ‘artifacts’ produced in this type of research become design exemplars, which embody theory as well as practical design knowledge. They serve as material manifestations of research hypotheses, and their value lies in how they can produce new insights both in terms of theory and practice.

RtD is not, however, a streamlined process. Depending on the researcher’s preference, different levels of emphases are put on theory in relation to the material making. Gaver argues, for example, that “the role of theory should be to annotate [a string of design examples] rather than replace them” (Gaver, 2012). The idea here is to give the design exemplars room to represent knowledge on their own.

Stolterman and Wiberg (2010), on the other hand, highlight a different approach to interaction research, which has a specific focus on theoretical advances. This is a concept-driven methodology grounded in theory rather than in studies of user conditions and situations. In this sense, it is a way of exploring completely new design spaces or unseen parts of already known spaces. In Stolterman and Wiberg’s words, it is about developing “innovative concepts that lead to intellectual development through definitions, conceptual constructs, and theories.” (2010, p. 112).

In between these two versions of RtD, Dalsgaard and Dindler (2014) propose a methodology which they call “bridging concepts”. These represent a form of intermediary knowledge and are “distinguished by their ability to facilitate exchange both ways between overarching theory and practice, rather than by being developed from theory or practice" (2014, p. 1637). Bridging concepts draw on design exemplars as well as theoretical insights and are often illustrated through so-called "design articulations" (Krogh & Petersen, 2009), signifying parameters that are important in expressing the qualities of a concept.

4.2 A Critical/Reflective Approach

Working with theory has been an important part of my research process. Of equal importance, however, are my design projects which have served as catalysts for the theoretical investigation. In this sense, I take inspiration both from Stolterman and Wiberg's concept-driven approach and Dalsgaard and Dindler's bridging concepts. However, when it comes to the idea of intermediate-level knowledge in general, I share some of the scepticism which Frauenberger (2019, p. 2:14) expresses when he writes,

> It is untenable to treat one end of the spectrum [in intermediate-level knowledge] as a positivist (the universal theory) and the other as a social constructivist (the ultimate particular). Without finding a theoretical basis on which these two kinds of knowledge can be treated in the same way, it is impossible to construct a continuum or to occupy the middle ground.

Based on this reasoning, I wish to make it clear that when I refer to theory, I see it as a form of *speculation* rather than universal truths. In the tradition of critical theory, the point of theory is not so much to describe the world as it is to *change* it. In this sense, I am following the tradition of critical design, or at least the reinterpretation of critical design made by Jeffrey and Shaowen Bardzell (2013), who define it in the following way:

> A design research project may be judged 'critical' to the extent that it proposes a perspective-changing holistic account of a given phenomenon, and that this account is grounded in speculative theory, reflects a dialogical methodology, improves the public's cultural competence, and is reflexively aware of itself as an actor— with both power and constraints— within the social world it is seeking to change. (ibid, p. 3304)

I argue that because of the complex and ideology-laden relationships between museums, visitors and cultural artefacts, a critical concept-driven design approach to digital museum interactions is called for. This allows designers to take a critical and reflective position (Sengers et al., 2005), which enables a different form of contribution to the understanding of museum experiences than what is possible through, for example, a user-driven approach. In addition, it creates the opportunity for designers to envision radically new ways of interacting with cultural heritage.

In my own research approach, the aim has not been to solve a specific problem, but rather to find and explore *tensions* in order to reach new insights. An important motivation has been to propose a 'perspective-changing account' of the museum visit, as well as to engage in a dialogical methodology (a back-and-forth movement between theory, practice and evaluation) as suggested by the Bardzells. Moreover, I have taken inspiration from Sengers et al. (2005) and what they call 'reflective design'. This design strategy follows the following six core principles (ibid, pp. 55-56):

1. **Designers should use reflection to uncover and alter the limitations of design practice.** Along these lines, Senger et al. suggest bringing marginalised practices to the centre of HCI. This includes both ludic and affective design, because of how they contrast with dominant technical practices within the field, which have their main focus on functionality, efficiency and optimality. This of course fits well into the framework of affective critical play, since the ludic, the affective and the critical are all important building-blocks in it.

2. **Designers should use reflection to re-understand their own role in the technology design process.** The idea here is that designers should aim to make conscious the personal preconceptions that are shaping their approach to design. It is of course hard to pinpoint exactly how this can be done, but part of it means that we should be open with who we are as designers and researchers. That is why I have included a section on my personal background in the introduction to this dissertation.

3. **Designers should support users in reflecting on their lives.** This point is one of the main aims of my design practice. In both of the design projects which I present in this dissertation, creating an intimate

connection to participants' personal lives is a key part. In my first design experiment this was done for example by prompting the players to reflect on their relationship to the past (in relation to the history of Yugoslavia) and on forgiveness in relation to personal experiences. In my second design experiment, I used personal questions such as "What part of you can you see in this?" which could be activated and used in relation to an artwork or anything that was present in the exhibition space.

4. **Technology should support scepticism about and reinterpretation of its own working.** This is something that became particularly important in the design of my second prototype; "Never let me go". Because of how this design included playing with agency, surrender and control through the use of a simple mobile app, it allowed for participants to reflect on (and affectively experience) the power of mobile technology (and designs) to influence our decisions, movements and perceptions of the world around us.

5. **Reflection is not a separate activity from action but is incorporated into it as an integral part of experience.** Allowing for reflection (which is not merely cerebral but includes an embodied approach) as part of an ongoing experience is fundamental to my design practice. For this purpose, questions are a significant part of the materials I work with.

6. **Dialogic engagement between designers and users through technology can enhance reflection.** In my interpretation, this underlines the importance of studying how users appropriate a technology in the course of the RtD process. If possible, this becomes even more important when we design for play. Back et al. (2017) even go as far as to include both designers and players into what they call the 'designer collective'. From my own perspective, the prototypes that I make are in themselves not the most interesting outcome of my work. Instead, the most interesting part is the insights and reflections, both for me as a designer and for the participants, that come out of putting them into action.

4.3 My Approach: Studies and Process

In this section, I provide a brief summary of the two studies which are included in this dissertation. This includes an account of the design process and an introduction to the different prototypes. I also provide information about the context in which these were carried out.

4.3.1 First Study: Monuments for a Departed Future

The first study which I have included in this dissertation was conducted in Belgrade, Serbia, at the Museum of Yugoslavia. This took place in the spring and early summer of 2017, right at the beginning of my PhD project. The study was done in collaboration both with the museum and with NextGame, a local design firm which was a partner in the GIFT project. More details about this can be found in Papers 1 and 2.

The main goal of the study was to explore how to design for critical engagement with an ideologically contested museum collection, which in the case of the Museum of Yugoslavia consisted of the legacy of Josip Broz Tito. The museum is located on the grounds of the former communist leader's palace and houses the grave of Tito and his wife.

My role in the research project was both to conduct my own study at the museum, and also to help evaluate NextGame's work. Having a local partner in this way helped me in my process, but also meant that I was dependent on them, for example when it came to organising the trials of our different prototypes.

My first visit to Belgrade was in March 2017 when NextGame organised a workshop together with the museum and invited all the research partners from the GIFT project. Already at this point it became quite clear that the representatives of the museum were not interested in games and play as a way of attracting more visitors to the museum. On the contrary, as one of the curators explained, "We want ten people to actually go out of the museum changed and not a hundred thousand of people that used gaming there". The ideal museum visit was for them a transformative one. Personally, I found this statement to be both interesting, challenging and problematic, as it was never made clear in what way they wanted their visitors to change. Nonetheless, it made an impression on me. Furthermore, I was affected by my own visit to the museum, and particularly by the 'House of Flowers'; the part of the museum where Tito and his wife are buried. Having a memorial place for the former dictator in a museum whose strategic plan included the words “CRITICAL THINKING” (*Strategic Plan 2014-2018 Museum of Yugoslav History*, 2014, capital letters in the original), seemed contradictory and problematic to me. Therefore, at that point, I took the decision to work with critical play, not with the intention of producing a critical game, but rather of working with it in order to foster critical engagement in the form of affective and transformative experiences. I was inspired by Witcomb’s (2013) ideas on how to present visitors with ‘poetic provocations’ in order to encourage critical engagement with ‘difficult’ historical topics. This led me to consider how I could design for an alternative affective experience at the museum of Yugoslavia – one that was not about commemorating Tito but about feeling into the complexity of the past and the relationship we have with history. Accordingly I started exploring ways of facilitating such an experience. This led me to the Artcodes platform (Preston et al., 2017); a prototyping tool, which allows for the use of scannable markers (similar to QR-codes) which can be shaped flexibly to fit the aesthetics of the experience design. In my case, I wanted to use the markers as an added layer of content which would be part of, yet would exist in tension with, the permanent exhibition.

Wanting to find a critical entry point into Yugoslav history, which could serve as an alternative narrative as well as providing rich opportunities for affective engagement, I decided to use the Yugoslav socialist monuments known as the ‘Spomeniks’ (Surtees, 2013). I first explored this idea on a game jam arranged in Malmö between 9-11 of June 2017. At this time, I collaborated with the artist Raquel Meyers who specializes in the use of teletext; an old-school medium with an aesthetics she compared to brutalist architecture, because of how “text is used unadorned and roughcast, like concrete” (Meyers, 2016, p. 1). As this graphical style seemed well-fitted to represent the huge concrete monuments with their modernist and somewhat eerie aesthetics, I asked Meyers for her help to make the monuments into artcodes. Together we made an early version of what would later become “Monuments for a departed future”. However, since we did not have a museum space in which to place the markers, we made it into a version in which the markers to be scanned were hidden on the body of a person (Figure 1).

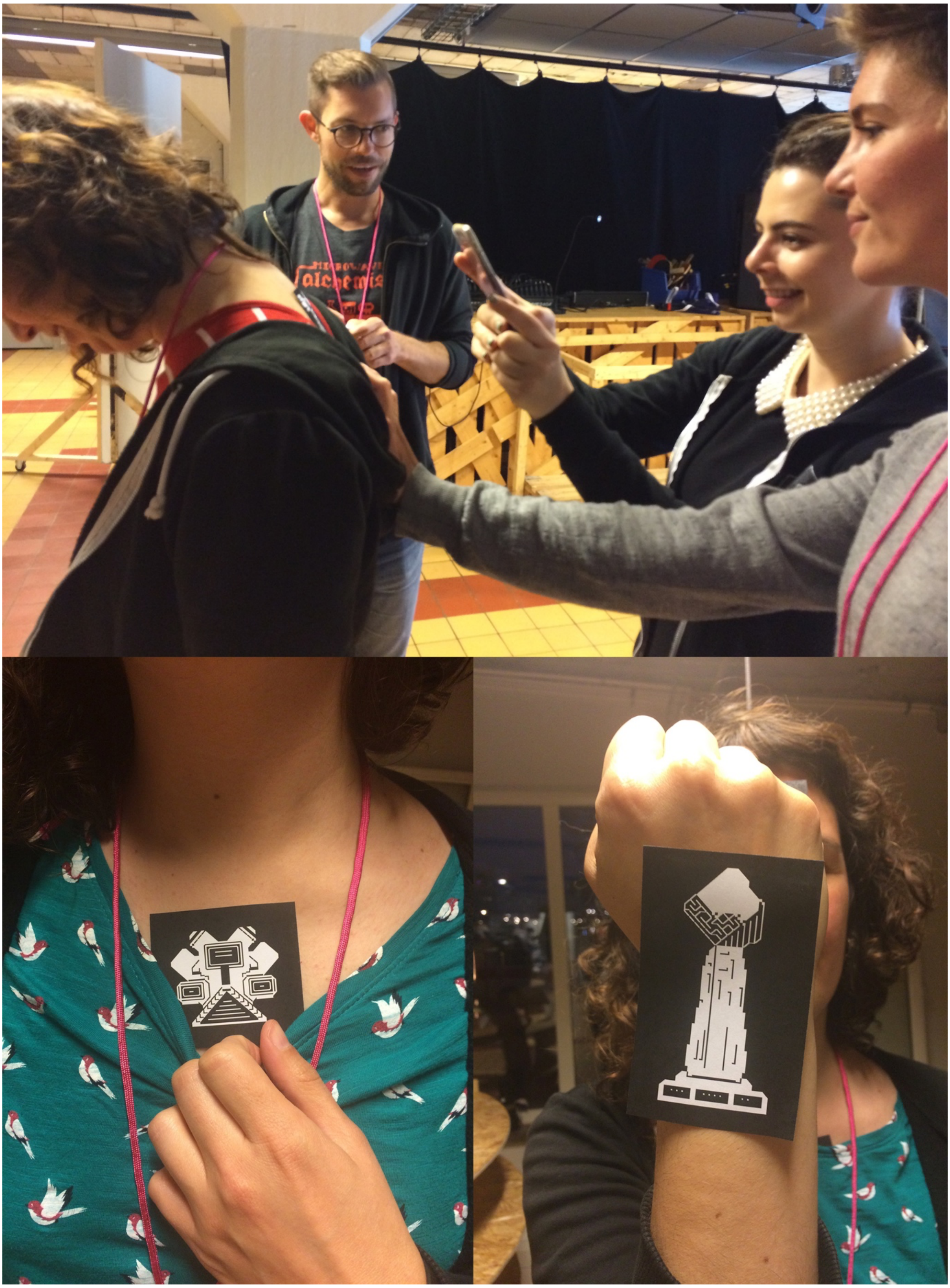


Figure 1. These photos were taken during the game jam in which the first prototype was made. They show how players interacted with the Artcodes app and how markers representing the Yugoslavian monuments were placed on the body of a person.

Soon after the game jam, I brought the idea of using the theme of the monuments back to Belgrade, to discuss it further with NextGame and the museum representatives. This led to a workshop in which three curators from the museum, two designers from NextGame, a researcher from Uppsala University and I brainstormed together on the theme of the monuments and during which the museum curators provided me with valuable facts about them.

During the following two weeks, I developed a new version of the prototype based on what we discussed during the workshop. In this design, I decided to use questions as well as playful challenges as a way of provoking the museum visitors' imagination, introspection and self-reflection. My aim was to elicit a sense of intimacy with the past, with the monuments and with certain parts of the museum. The playful challenges were also intended to serve as invitations for participants to discreetly explore alternative ways of being in the museum. For example, a few of the challenges included the prompt to close one's eyes for a moment. In the context of a traditional history museum, because of how everything there is about looking, this could be seen as a small act of deviation.

I soon as I had a working version of the prototype, I collaborated with NextGame to organise two trials at the Museum of Yugoslavia. The first trial took place on the 20th of June 2017 and involved four art history students from the University of Belgrade. The next trial took place eight days later, on a hot summers day when the air conditioning inside the museum was unfortunately broken. This trial included representatives from the museum, designers from NextGame and researchers from the GIFT project. More details about the outcomes of the trials can be found in Papers 1 and 2.

4.3.2 Second Study: Never Let Me Go

The second study was conducted between January and August in 2019. This time, I did not collaborate with any GIFT partners, as I had done in the previous study. There were several reasons for this. I wanted to work with art museums, as I had worked with a history museum before and was eager to broaden my field. Also, I did not want to cater to the needs of any specific partner. Instead, I wanted to explore whether it was possible to design a more generic application which could work, more or less, in any art gallery or museum.

The main goal this time was to include a social component in the critical play design, one that would be ambiguous in its nature but would allow for possible intimate experiences. My belief was that this would allow for a larger spectrum of outcomes in terms of player behaviour as well as more affective engagements. The question I had was whether social and playful elements could be combined with more personal, intimate and introspective elements in a meaningful way. At this point, I was also inspired by one of the other partners in the GIFT project, namely Blast Theory, who had been experimenting with creating an app that enabled visitors to give a museum experience to a friend or a loved one (for more details see Spence et al., 2019). I had been helping out in the trial of the Gift app at Brighton Museum the previous summer, and some part of its design had made an impression on me. One aspect was the use of voice, which is an important and recurrent element in Blast Theory's work. This was something I wanted to explore, because it allowed for players to free themselves from their phones for a moment, rather than to be constantly looking at their screens during play. Another significant part was how the app enabled an intimate form of communication to be established between two visitors (although only one was physically present in the museum in their design). I also wanted my design to be even more open-ended than in my previous study. My goal was that the design should facilitate rather than direct the users' experience. It should work as a tool for defamiliarization, both in terms of the encounters with the objects on display (as did the Gift app), but also when it came to any pre-existing relationship between the players. Moreover, it should affect how the players saw themselves.

In short, what I ended up designing and implementing was a two-player system (in the form of two interconnected mobile apps), which I called "Never let me go". By using the apps, one player (the controller) could orchestrate an experience for the other player (the avatar) as they explored the museum together. This was achieved by giving the controller the ability to send prompts to the avatar, who would receive them as pre-recorded voice messages (as they were wearing headphones). The prompts basically consisted of different types of short instructions and questions. More details about this can be found in Papers 3-6.

I built the first version of the prototype at the beginning of 2019. The first small-scale test took place on the 5th March at the National Museum of Denmark (which I also used later for the main trial) (Figure 2). A second iteration was tested at Kunsthal Charlottenborg on the 9th March (Figure 3) and a third at Arken Museum of Modern Art on the 14th March (Figure 4). From the first test, the basic concept of the design proved successful, and the app continued to work well at each of the different sites (although with some technical issues that needed to be fixed). However, what I continued to work on, in subsequent iterations, was the content; the various prompts which the controller could send to the avatar. I discovered that there was a fine balance between what the controllers wanted to be able to do, and what the avatars experienced as too controlling. This took a few revisions before I felt that the balance was right.

At this point it was time to organise a larger trial. The first step was now to get permission from The National Gallery of Denmark to use their premises. I decided to invite testers for the trial, rather than trying to persuade visitors who were already on location. To facilitate this, I set up a public Facebook event which I connected to the GIFT project's Facebook page. I also gained permission to send an invite through an email-list for expats living in the Copenhagen area who were interested in cultural events.

At this stage I also started to collaborate with the Affective Interactions & Relations (AIR) Lab at the IT University of Copenhagen. This meant that I was given the opportunity to try out some of their resources as well as obtaining their help and support. Together we discussed the options I had for evaluating my prototype and I decided that in addition to the qualitative methods I had already planned, I would also try out sensors for galvanic skin response (GSR) in order to track the players' emotional arousal during play. What the GSR sensor does is to measure the activity of the sweat glands in the hands – a bit similar to how a lie detector works (Sharma et al., 2016). It is not possible to measure which emotions players are experiencing, only how intense they are. Nonetheless, I saw this as an opportunity to explore how this type of sensor data could complement the qualitative/self-reported data from interviews.

I conducted the trial at The National Gallery of Denmark between April 22nd and May 2nd. I greeted the testers at the museum cafe as they arrived, explained the test procedure, gave them mobile phones and headsets and attached the sensors to their left hands (all players were wearing sensors during the trial). Each test session lasted approximately one hour. I kept the players under observation at all times during the sessions, and took detailed notes. After the test was finished, I found a quiet spot in the museum to interview the testers.

The outcomes of the main trial are described in Papers 3-6. However, what is not included in these papers are the data gathered through the GSR sensors. The reason for this is that I encountered several challenges with using GSR tracking outside of a laboratory environment.

First of all, the sensors would often fall off during the test sessions as players moved around. Secondly, disturbing elements, including sudden sounds or other people's movements, such as inevitably happen in a public space, could not be excluded during the trial. The GSR data therefore included emotional reactions to all kinds of stimuli outside of the designed experience. Nevertheless, what could be done in this particular case was to compare the GSR data from the avatars and the controllers and to look for patterns. This did show some interesting tendencies, however without enough data to verify any emerging patterns, in combination with what I considered to be a lack of knowledge and experience to put the findings into context, it did not provide enough insights to be worth publishing.

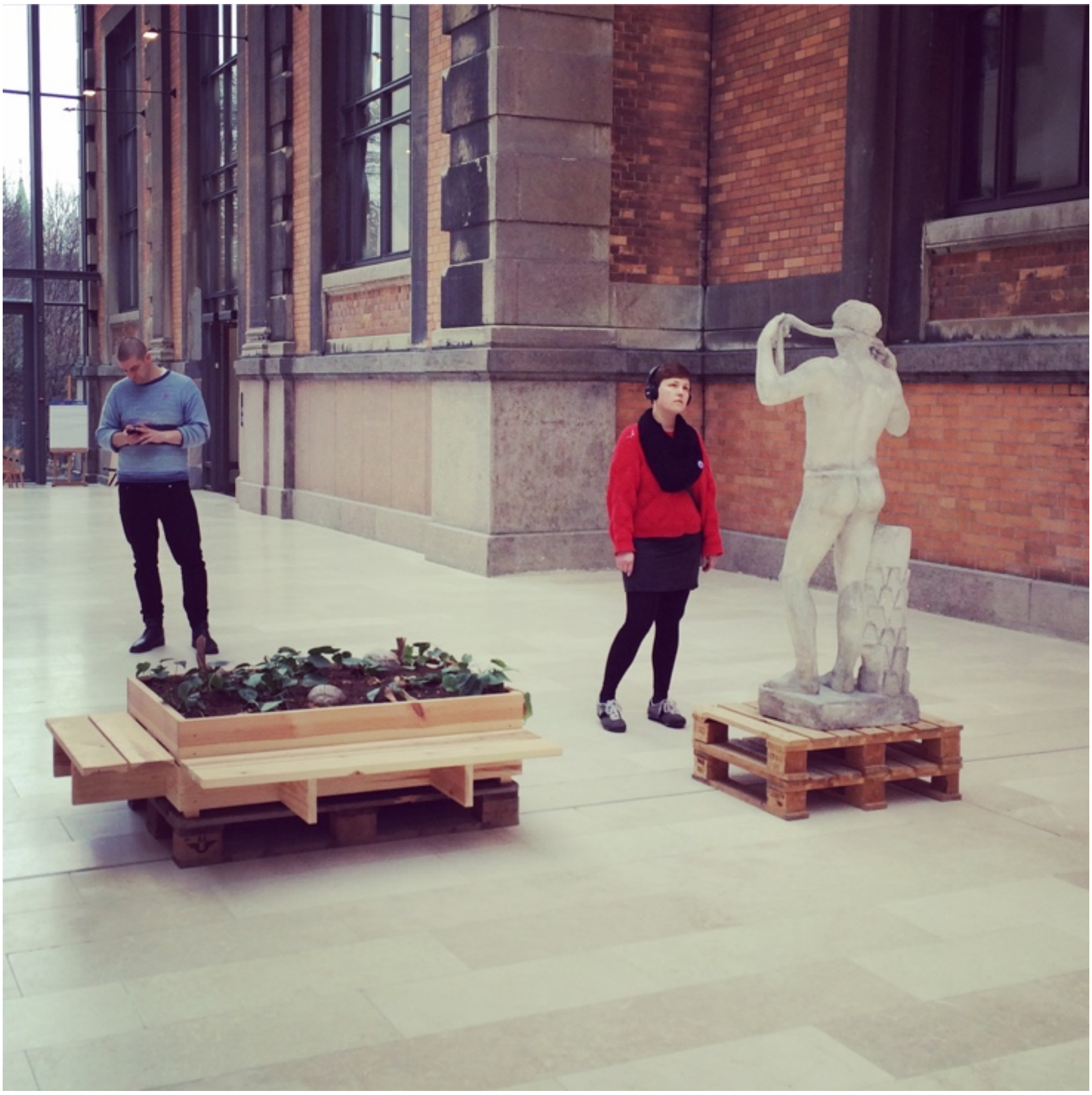


Figure 2. From the first test at The National Gallery of Denmark. The Avatar is looking at a statue while the Controller is looking at his phone to decide which prompt to use next.

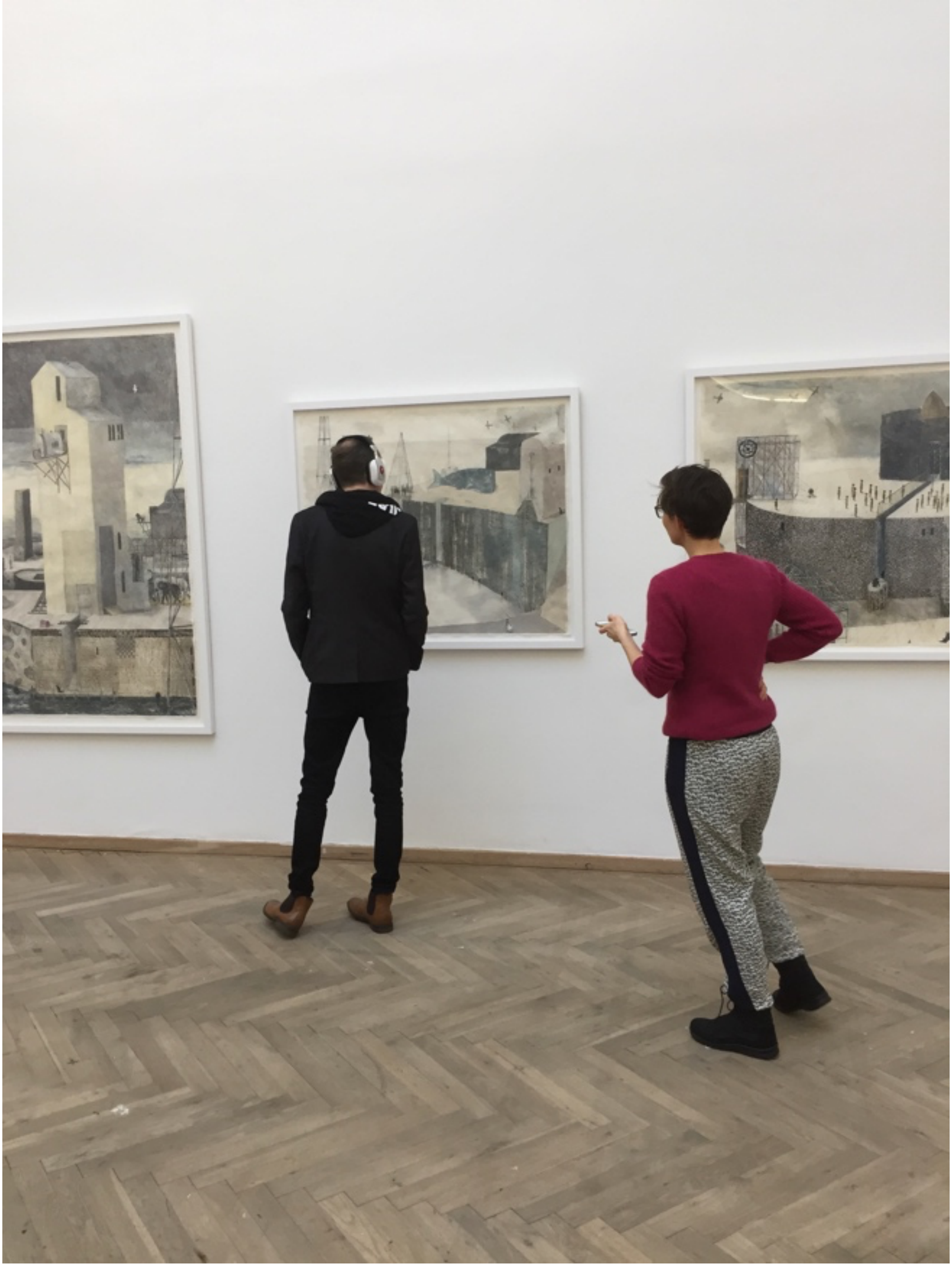


Figure 3. From the second test at Charlottenborg. The Avatar is here looking at a painting while he is being observed by the Controller.

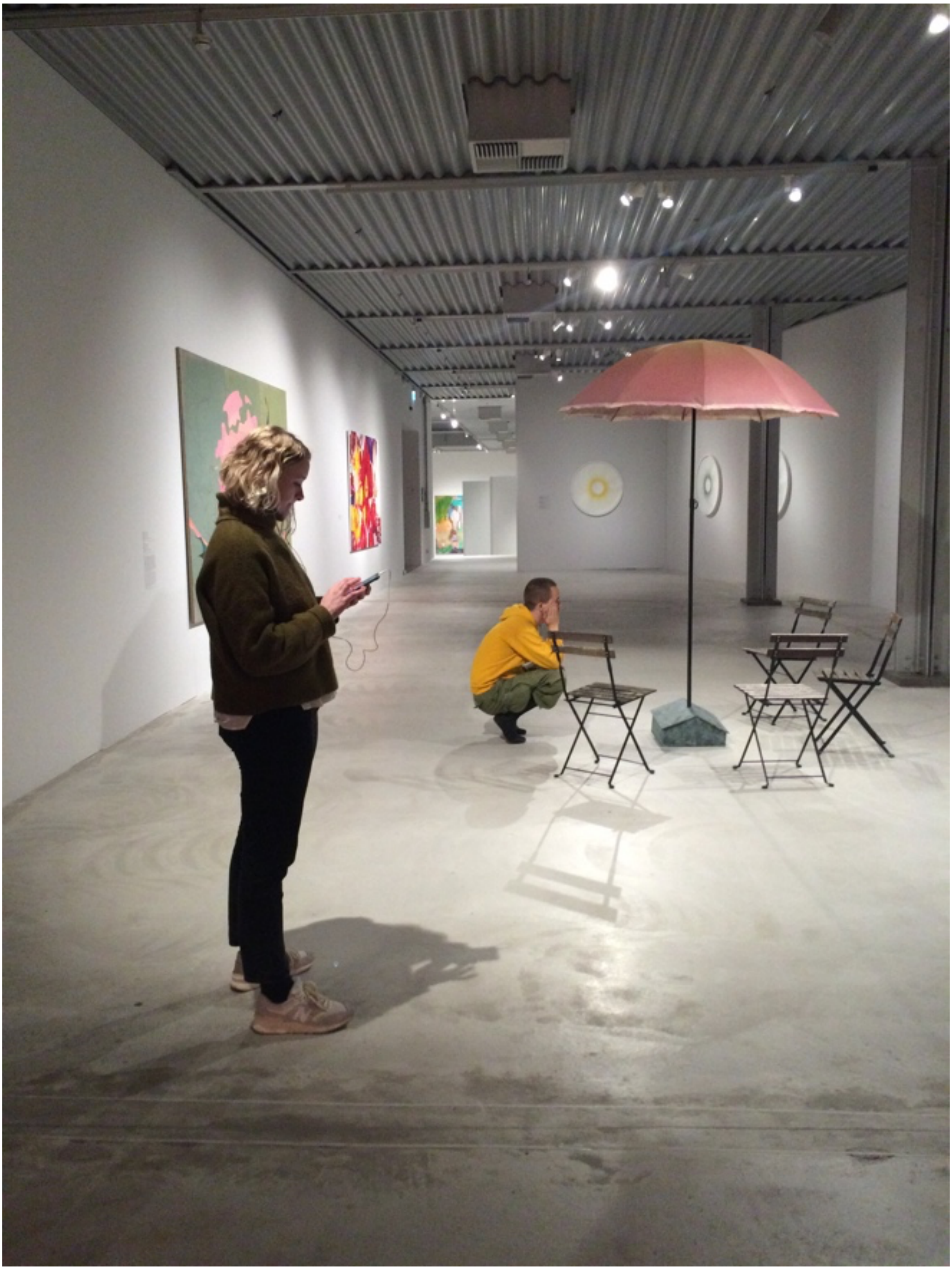


Figure 4. From the third test at Arken. The Avatar is squatting down close to an art installation, while the Controller is looking at her phone.

4.3.3 My Process

The research process I have conducted during this PhD project can roughly be represented by the following five phases, which were broadly repeated for each study, although phases would sometimes overlap and would not necessarily take place in the same sequence.

1. **Reflection and theoretical explorations**
   In the beginning of my research process, in order to orient myself towards the world of museums, I started to engage with museology and did a lot of reading to get a grasp of the different discourses discussed therein. This theoretical grounding became an important component in my decision to work specifically with art and history museums because of the challenges these museums presented in terms of ritualised museum practices shaped by ideologies and power. Moreover, it led me to realise the importance of a critical/reflective approach to the design of experiences in the context of museums.

   As I came back to this phase of the process a second time, the experiences and insights from my previous design experiment sent my theoretical exploration in new directions. I now began to play around with theoretical concepts in order to develop a coherent framework which could help me make sense of the results from the first trial, as well as to broaden my understanding of the design work. Hoping to deepen the insights that I had already gained, I made a decision for my next experiment to focus more on the social dynamics of play and to foreground the tensions between ritual and play.

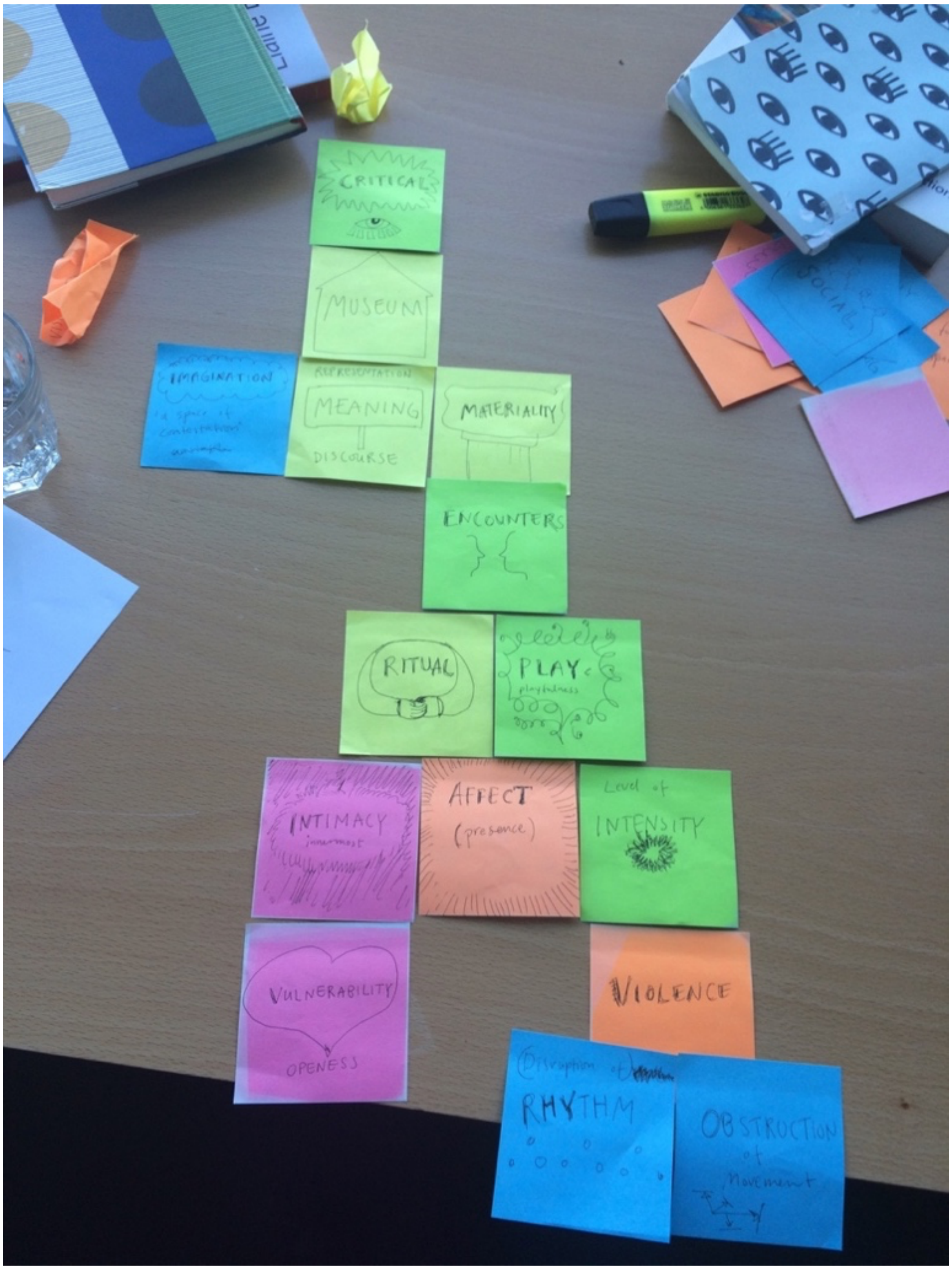

CRITICAL
MUSEUM
IMAGINATION
REPRESENTATION
MEANING
DISCOURSE
MATERIALITY
ENCOUNTERS
RITUAL
PLAY
playfulness
INTIMACY
AFFECT
(presence)
Level of
INTENSITY
VULNERABILITY
OPENESS
VIOLENCE
Disruption of rhythm
RHYTHM
OBSTRUCTION
of
Movement

Figure 5. Playing around with concepts.

2. **Design and prototyping**
   Within HCI, prototyping is an important part of design research. It allows for observations and insights that would not be possible otherwise (Gaver & Bowers, 2012; Koskinen et al., 2011) as well as for the collection of empirical data through user tests (Stappers & Giaccardi, 2011). For these reasons, making prototypes of my designs was a significant part of my process. It allowed me to engage in an iterative process of building and testing (as a form of sketching), even before the prototypes had reached a level where they were ready to be tested externally.

I decided early on that I would program the prototypes myself. The reason for this was twofold. First of all, it would give me direct control over the development process. It also allowed me to go back to programming as a practice and to code as my material, something which I had not been doing for some years before my PhD. As I consider programming to be an empowering form of craft, I wanted to retain this power for myself, rather than to surrender it to someone else. Even though this still meant using software made by others, programming my own prototypes enabled me to take a larger responsibility for the outcome. In addition, I ended up using my own voice as material for the second prototype. Again, this was convenient for the process, but also meant that I, as the designer, became part of the outcome in an intimate way. This helped me to reflect on my role as designer, and on the influence I would have over the users.

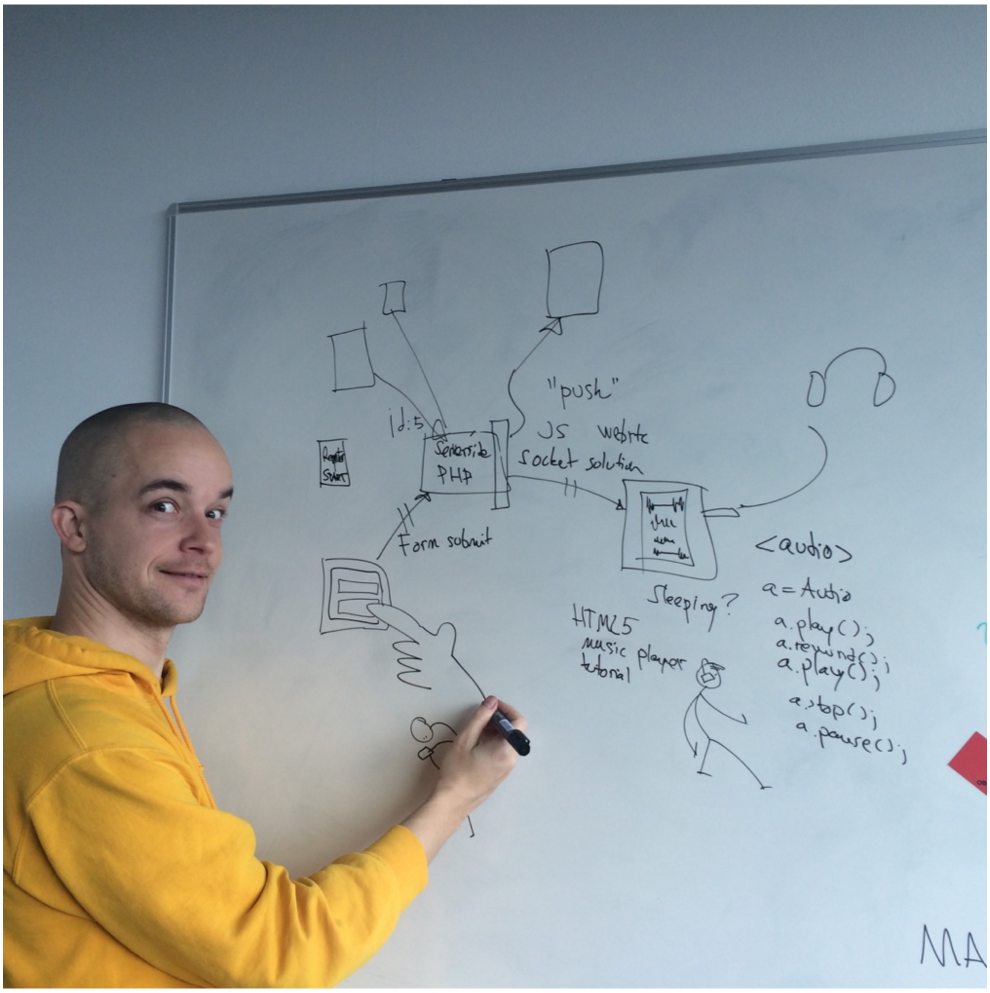

"push"
id:5
Register Start
Serverside PHP
JS webrtc
socket solution
Form submit
<audio>
a = Audio
a.play();
a.rewind();
a.play();
a.stop();
a.pause();
Sleeping?
HTML5
music player
tutorial
MA

Figure 6. Mace Ojala, research assistant for the GIFT project, was an important sparring partner when it came to finding a suitable technical solution for "Never let me go".

3. **Deployment ‘in the wild’**
   An important consideration for the design approaches that I was working with is the context in which an experience takes place. Therefore, it was crucial to my research practice to be able to work on site in a museum, as a form of ‘research in the wild’ (Crabtree et al., 2013). During my first design project this meant that I spent altogether three weeks in Belgrade, Serbia, working on the prototype and conducting user trials at the Museum of Yugoslavia. During my second project, it meant trying out the prototype at several other art museums before the final trial at the Danish National Gallery in Copenhagen. This provided a valuable opportunity for me to reflect on my designs from within their intended context. It also meant that test users experienced the prototypes as part of a ‘normal’ museum visit, with all of what that entails (e.g., in the presence of museum guards and other museum visitors), which no doubt had an effect on their behaviour and the way they felt about the experience.

4. **Evaluation**
   In order to gather empirical data from the user trials, I used observations and interviews. Observations were important in order to get insights into the different ways in which the users appropriated the prototypes. Play is always situational, and therefore each play session will differ. However, most often there are distinct patterns which can be discerned and learned from. Well-documented observations are therefore helpful in the process of looking for these patterns. In addition, I used semi-structured interviews to get an understanding of how the participants felt about it, what they found important and how they made meaning out of the experience. Inspired by (post-) phenomenological research methods, I used questions which were “open-ended, so that the subject has sufficient opportunity to express his or her view point extensively” (Giorgi, 1997, p. 245). The interviews were audio recorded, transcribed and analysed using a process of inductive content analysis (Elo & Kyngäs, 2008). This meant that themes emerged from the raw data after recordings had been examined and compared repeatedly. In the end, both the user patterns which emerged out of the observations, and the themes which emerged from the interviews, provided important new insights. Together with insights from the design process, this became the material for the publications which I have included in this dissertation.

However, evaluations in the form of user tests need to produce enough data in order for the results to be considered validated. In my first study this was a clear limitation as I only had five external testers in addition to the 'expert panel' which consisted of museum representatives and research partners in the GIFT project. I had little influence over this evaluation process as it was led by NextGame, but in my second study I made sure that I would have more control.

5. **Reflection and theoretical explorations (2)**
   This last step of the process merges with its first, as the research process continues in a spiralling movement. However, at some point, things need to come to an end. The final phase of my reflection and theoretical explorations formed the basis of the overall theoretical framing of my work, which is what I have tried to express in this introductory part of the dissertation.

4.4 The Mobile Phone as Mediator of Play

Reflecting specifically on the technological aspect of my work, I turn to post-phenomenology: a philosophy of technology that highlights technology, not merely in terms of functional and instrumental objects, but as a mediator of human experiences and practices (Ihde, 1990; Verbeek, 2005). From this perspective, human beings and technologies are seen to constitute each other in an ongoing process of mutual relatedness.

The advantage of using post-phenomenology as a methodological framework in design studies which focus on the affective dimensions of digital interactions is, first of all, that it allows for the possibility of articulating experiences 'from within' (Rosenberger & Verbeek, 2017, p. 20). This means that qualitive methods (as in the form of user interviews) are preferred as tools for evaluation. Secondly, the post-phenomenological framework is helpful in the articulation of the specific relations users have with different types of technology. This I believe is of great value in a reflective design process, for example when it comes to the design of hybrid experiences.

In my own work, I found people's relationship to their mobile phones to be particularly interesting. Post-phenomenologists have devoted a considerable amount of time to studying the use of mobile phones. In Robert Rosenberger's work (2012, 2013) he argues that mobile phone usage should be understood primarily as an *embodied relationship* which transforms our ability to communicate with each other over distance. There are situations when our relationship to the phone becomes more hermeneutic, for example when the phone is used to scan QR-codes or to determine a geographical position. However, from the perspective of my own work, it is the mobile phone's capacity to transform a user's actional and perceptual engagement with the world (Ihde, 1990) which is of most importance. From this point of view, mobile phones are indeed powerful tools which can be used to strongly influence people's behaviour, as in the case with so-called 'nudging' (Thaler & Sunstein, 2009) or 'persuasive technology' (Fogg, 2002). Interestingly, though, it also makes the mobile phone a great tool for play. It can let us enhance (or, let us not forget, diminish) our everyday life through new playful contexts as well as through making non-game situations more game-like (c.f. Nicholson, 2012).

There are, however, certain interesting paradoxes of mobile phones: they are simultaneously intimate and external, instrumental and expressive (Fortunati, 2002; McCarthy et al., 2006). These paradoxes lead to ambiguous user experiences, for example the interaction with a voice without a body. Of course, by now these are things we have grown accustomed to. In hybrid designs, however, one can choose to foreground these experiential qualities in different ways. For example, both the presence of a body, and the lack of one, can be emphasised. In "Never let me go", my own voice would replace the voice of the controllers, creating an interesting tension between the physical presence of their bodies and the lack of mine.

Furthermore, semiotic contents in the surroundings can be layered with digital contents accessed through the mobile device. This is often used to add information, but it can just as well be used as a tool to question things or to draw our attention to the sensory qualities of the material environment. In this sense, mobile technology offers some very specific opportunities to combine the sensory affects associated with non-representational dimensions of experience (such as by foregrounding the intimacy and the ambiguity of the technology itself), and the affective intensities conjured through the evocation of semiotic content (c.f. Guattari, 1996; Hutta, 2015). This is what I have found specifically interesting to explore in my own work.

To conclude, as producers of 'hybrid reality' (de Souza e Silva, 2006), mobile technology has the capacity both to manipulate users towards problematic behaviour (such as never being fully present in physical reality) and to empower them by framing reality in playful and poetic ways.

The tensions which these different capacities bring to the fore, as well as the transgressive potential that lies within them, is the reason why I believe mobile technology is a powerful tool for designers working with affective critical play and this is why I have used it in my own studies.

5. Discussion

In this chapter I will discuss the outcomes of my work under the rubric of five related design elements, which are grounded in my theory of *affective critical play* and which are illustrated in the two design exemplars which were produced during my studies. My motivation for articulating my work in this way is to bridge the the gap between theory and practice. It also facilitates comparison with other designers' work and hopefully might inspire other designers to put particular effort into considering these elements when designing for affective critical play.

5.1 Emergence

The first aspect of affective critical play that I want to draw attention to is *emergence*. This is, in a sense, the main component to consider, as it is connected to the foundation of affective critical play, namely *play*. There are several ways in which emergence occurs in play. It is for example well-known that simple rules can lead to a vast variety of outcomes (Juul, 2005). However, what I wish to highlight here is particularly the emergence of *meaning, actions* and *affects* in play.

In order to describe the emergence of meaning in play, Katie Salen and Eric Zimmerman (2004) compare games to language. The meaning of any utterance of language is not just linked to grammar, it is also highly contextual. Although simple rules shape the way we speak, *how* we say something can vary almost infinitely. On top of this, two identical sentences can mean vastly different things dependent on who utters them, how they are voiced and in what context. Play is a particular context in which we are free to come up with our own interpretations of things. For example, in "Never let me go", the prompts which could be sent by the controllers would often make the avatars interpret the artworks in new and unexpected ways. One avatar described it in this way:

> I especially remember one of the first things she asked, or you said: "Imagine that this is looking back at you". I felt like all the pictures were staring at me. And there were some bizarre creatures in there.

The relational shifts that take place during play also give room for the emergence of new behaviour. This is described by Kozel (2012) as improvised performances occurring "out of the fissures in habit and codified behaviour" (ibid, p. 75). This does not necessarily entail any conspicuous gestures. It can just as well involve very subtle shifts in movement or posture. One player of "Never let me go" describes the act of discreetly standing on her toes in this way:

> I think at some point she told me something like to become light. And that was a bit challenging. I mean I didn't feel totally comfortable as doing it at home. At the same time, I felt like doing it. And it was like yeah, there are people here, but it's
> not a bad thing. So, I just did it.

This points to how intense these moments can be, even when they are hardly noticed by anyone other than the player involved. By expanding our possibilities for action, play lead to an amplification of affect (Massumi, 2002, 2015). That is why it is often accompanied by the emergence of bodily sensations and emotions which we do not always have words for.

Now in order to discuss this from a design perspective, I would like to point to the work by de Valk et al. (2012) where they elaborate on the delicate task of designing for a balance between completely free and tightly constrained play. In my own research work, this has been one of the major challenges. In Paper 6, I articulate this issue as a balancing act between *ritual* and *play*. On the one hand, players need to be given room to make their own interpretations as well as to decide on how to act. Otherwise, no emergence can occur in these areas. On the other hand, in order to prevent players from feeling too confused, insecure or awkward, designers need to set a clear frame for the activity. Here is where the ritual aspect comes in. According to Henricks,

> Rituals – be they bodily, psychological, social, or cultural – rely on seemingly external formations. The ritual actor wishes to be guided by these formations, in part so that consciousness can be released to address other matters.

This is a key issue in relation to designing for emergence. What Henricks points to is the function of rules or frameworks in giving participants room to explore other dimensions of experience, such as affect. In my own design work, this issue is particularly foregrounded in the design of "Never let me go". In this two-player system, one player (the controller) can be seen to be spontaneously and playfully creating a ritual for the other (the avatar). As described in Papers 3, 4 and 5, most players seemed to enjoy giving up control in the role of the avatar, because it gave them the opportunity to explore the museum in new and sometimes unexpected ways.

Another important thing to consider when designing for emergence, is the context in which it is fostered. Here I wish to highlight two issues related to *emergence as part of a museum visit*. The first issue concerns how a museum experience is framed, both from the perspective of its participants and from the perspective of the museum. The second issue relates to the social, cultural and legal constraints which become present as we step into a museum (here seen from a European perspective).

When it comes to the first issue, the challenge lies in whether the participants and the museum staff are able to see the purpose of a museum experience when it goes against their ideas of what a museum visit should look like. In regard to my first study, it became clear that the curators of the Museum of Yugoslavia were struggling to see the purpose of introducing an experience into the museum that, in certain ways, undermined the authority of their work (see Paper 2). Moreover, even though a majority of the participants reported having deep and meaningful experiences as a result of playing "Monuments for a departed future" (or "Monuments" for short), some of them still expressed an uncertainty about whether this was an acceptable way to visit the museum (see Paper 1). This sentiment was echoed by some of the participants in my second study at the National Gallery of Denmark. In this case, some of the players felt frustrated because playing "Never let me go" distracted them from engaging with the exhibitions in the way they normally would (see Paper 3). Now these design challenges can be seen both as a reason for, and a result of, the second issue, namely the resistance which exists against the emergence of new behaviour in a museum. In both studies, players restricted their behaviour at least to some degree when playing in the museum. They avoided running, touching, and physical postures that were too conspicuous (see Papers 3, 5 and 6). One participant also refrained from closing his eyes when asked to (Paper 1). The players reported self-censoring themselves in these ways out of respect for the museum and other visitors, out of embarrassment, or out of fear for social and legal repercussions (which meant avoiding being seen by security cameras or the museum guards). This can be related to Butler's work on how our everyday performances take place "under and through constraint, under and through the force of prohibition and taboo" (Butler, 1993, p. 60). However, what I believe should motivate designers to overcome these issues, is that once players allowed themselves to be open to emergence in meaning, actions and affects (and to deviate from the norm), it led to an intensification of the museum experience (as discussed in depth in Paper 5), making the visit more emotional, unexpected and exciting than what they were otherwise used to.

5.2 Ambiguity

One way to design for emergence is by using *ambiguity*. I see ambiguity as a key component of affective critical play, because of how it explicitly gives room for players to explore different possibilities in meaning and in ways to act. According to Gaver et al. (2003), this can be done in three ways; ambiguity of information, ambiguity of context and ambiguity of relationship. In my design research work, I have made use of all of these aspects of ambiguity. First of all, I addressed ambiguity of information through the use of open questions. For example, in "Monuments", I would ask: "What kind of monuments are missing in the world today?" and "How should we treat the memories of the most horrible things in our past?". These questions would prompt users to widen their perspective and to take in issues which were not articulated by the museum. Another example from "Monuments" which concerns the ambiguity of context, is the decision I made to use visual markers to represent monuments inside the museum. By engaging with these, players experienced being taken to several places at the same time, or as one player expressed it:

> It's taking you somewhere else. It's taking you to the past. It's taking you to the locations where these monuments are, which are all outdoors and then you are indoors.

Moreover, hiding the monument-markers inside the permanent exhibition highlighted both how the museum's collections only represented a limited part of Yugoslav history, and how the monuments themselves are sometimes forgotten or disregarded by the world outside of the museum (see Papers 1 and 2). When it comes to ambiguity of relationship, the design I made for "Never let me go" is a good example. Here one player was asked to follow the other's lead, but at the same time, the follower could choose to resist or to deliberately misinterpret any command. In this way, the relationship between the two became ambiguous. Because of this, the players' social relationship was foregrounded in the experience, which would often lead to players reflecting on the way they interacted with each other (see Papers 3, 4 and 5). Ambiguity was also an important part of the content in "Never let me go". Like in "Monuments", the content included questions and challenges of different sorts. "Becomings" was a category of prompts designed to be particularly ambiguous. This included instructions such as "Become light", "Become sharp" or "Become part of this". Some players reported disliking these prompts, because of their vagueness. They were not sure whether they should be visibly expressed through their body or be interpreted more as states of mind. Many of the controllers therefore avoided them (not wanting to cause unease for their avatars). However, the players who did make use of these prompts described many unexpected, intense, and even potentially transformative experiences as a result (see Papers 5 and 6). "Feelings" was another category of prompts, which consisted of questions pointing to emotions, for example: "Can you feel the longing in this?" or "Can you sense the anger in this?". From a design perspective, both the subjective nature of emotions and the expectations of how an art experience should evoke emotions, are here played with. In relation to these prompts, several players reported feeling pushed to feel certain things (which they either wouldn't or couldn't). They also described situations where the controller would send a 'feeling-question' to the avatar and when received, it would be something that the avatar did not agree with. This would lead to reflections on their personal differences. One player describes it in this way:

> A very clear example of this was the portrait where you asked me "Can you feel the anger in this?". Or something like that. And all I could see was this guy that was really, really sad. (…) So that was interesting, to see the differences in how we perceive things.

Furthermore, the whole set-up with these types of questions led to many humorous situations when there was a delay between what seemed to be a fitting moment (when the avatar was looking at a particular piece of art) and the moment when the question was actually received (as the avatar was then looking at something else). Some players saw this as a flaw, caused by the hard-to-maneuver interface (see Paper 3). However, it also caused a lot of laughter and occasionally some interesting and unexpected connections.

5.3 Defamiliarization

Defamiliarization is a technique which is used both by artists (Crawford, 1984) and by designers in the area of critical design (Dunne & Raby, 2001). It is seen as a way of removing the habitual nature of perception and of facilitating changes in perspective (Danto, 1981). This is what happens when we put a familiar painting upside down, or place an ordinary shoe on a pedestal and call it art. In this sense, defamiliarization is a natural component of play, as new perspectives are made possible whenever we step into the 'magic circle' (Henricks, 2015; Huizinga, 1938/1998; Stenros, 2012). In my own work, defamiliarization was fostered, first of all, through the creation of mobile apps which set up a framework of simple rules. This is what de Valk et al. (2012) articulate as an *invitation* to play. From a design perspective, it's important to consider carefully how the users will be introduced to the premises of the experiences. In my first study, some players expressed being uncertain of what was expected of them. Therefore, in my next study, I took extra care to create an introduction which would explicitly communicate what was expected of the participants. This was done through two separate audio instructions (one for the avatar and one for the controller) which were triggered as the controller pressed the start-button in the app. In the interviews, players would often refer to this as something that made them feel more comfortable to take part in the game. In both studies, once players accepted the conditions, they were given an alibi to behave, feel and experience the museum differently than they normally would. I used questions and challenges to prompt players to "see with new eyes" (see paper 1, 4 and 5). Here is an example from "Monuments":

> Find an interesting object in the room you are in. Place yourself in front of the object. When you are ready, imagine that the object is a monument. Does it change the way you look at it? What do you think it could be a monument for?

These kinds of instructions made participants see both the museum and the objects on display from new (and sometimes surprising) perspectives. One player of "Never let me go" who had expert knowledge of art described a letting go of her habit of using that knowledge when viewing art. She explained it in this way:

> How can you analyze this [picture]? What kind of artistic movement is this, or how can I relate this to my knowledge of art history? I would say that these thoughts were coming from a very scholarly place. And it is interesting, this experience actually made me realize that.

In this case, the game helped her to appreciate the art from a more personal perspective which increased her affective engagement with it. However, another aspect of defamiliarization that the players of "Never let me go" reported was that it also helped them to use the art in playful ways. They would make jokes about different artworks or use them as props in their personal communication. As one player explained, "If I can't connect emotionally with the art, then I can have fun with it." (see more details in Paper 3). In this sense, defamiliarization (in the context of play) can be seen as a way to foster a more disrespectful or 'carnivalesque' approach to the museum (Bakhtin, 1984; Sicart, 2014).

5.4 Intimacy

Another key aspect of affective critical play is *intimacy*. According to Gaver (2009), technologies for evoking intimacy usually either mediate intimacy in outward expression or in internal reactions. My work is in the latter category, as the purpose of it has been to foster intimacy, not just between people but also between players and their surroundings as well as intimacy with one's own personal history. My aim has been to prompt players to cross a boundary and connect with the other person or other parts of oneself, thus "being at risk of losing oneself to some degree", as Sadowski puts it (2016, p. 45). In a similar way to the work by Kaye (2006), I have relied on constrained forms of communication and stripped interfaces to make space for complex and evocative experiences. For example, in "Never let me go", it is the particular type of relationship which gets established between the two players that leads to the elicitation of intimacy, as it involves one player surrendering a significant amount of control to the other (see Paper 4 for a discussion on this). Furthermore, my aim in both my studies has been to emphasise embodiment and to facilitate introspection and affective engagements through simple means. Again, this was done through questions, instructions and playful challenges expressed in text or by voice. In this way, I relied on players own imagination rather than on evocative narratives and elaborate graphical representations.

When it comes to “Monuments” this included asking players to sit down and close their eyes in order to direct their gaze inwards. In “Never let me go” the controllers were given a whole category of prompts which were designed to evoke bodily awareness in the avatars. Moreover, several questions and challenges were formulated in such a way as to create associations with players’ personal lives (see Papers 3, 4 and 5). The intention here was to offer perspectives which would let players see themselves and their lives in a new light. For example, in “Monuments” I included this challenge in relation to the theme of forgiveness:

> Find a place to sit. Now think of someone you have had a conflict with, in the past. Does it still hurt when you think about it? Imagine what it would feel like if you forgave that person completely.

This was presented in conjunction with the ‘Jasenovac’ monument, a memorial over the victims of a forced labour and extermination camp active during WWII in Croatia. Many players reacted very strongly to this challenge. One player singled it out as the most deep and meaningful part of the experience for her. Another player felt like she couldn’t go on playing after encountering it, because it unsettled her in a negative way. As Benford et al. (2013) point out, for an experience to be uncomfortable to some degree can be part of the designer’s purpose. From a museum perspective, this is echoed by Witcomb (2013) when she highlights the importance of fostering unsettling experiences in relation to ‘difficult’ history. However, this is of course a balancing act and it is important that players do not feel too uncomfortable. Working with intimacy is a delicate matter, which needs careful consideration. However, the advantage of designing for intimacy in combination with play, is that it *can* give rise to empowering and transformative experiences for the players.

5.5 Trust

The final consideration that I wish to discuss here, is the element of *trust*. This is about trust in the situation, in the system, and between the players. Playing with cultural boundaries and social norms can in some situations be unsettling and in the worst case even dangerous (see Papers 5 and 6). Therefore, designers working with affective critical play need to consider safety issues (this includes physical, emotional and legal aspects) and how to design for trust. This became apparent in relation to the negative emotional reaction during my first study mentioned above. This led me to reflect on my own role as a designer and the types of experiences I wanted to design for. I realised that in a way I was simply replacing the voice of the museum with my own instructions, and in this sense, I wasn't empowering the visitors as much as I wanted to. This learning influenced me in my second study. One significant difference between "Monuments" and "Never let me go" is that in the latter, the questions, and challenges are communicated to the participants by a known person who is present with them and whom they trust (at least to some degree). In this way, I was surrendering some of my own control as a designer, and allowing the players to negotiate their level of engagement on their own. This proved to be a successful strategy, as several players reported having intense affective experiences, without anyone showing signs of negative reactions this time. As one avatar explained, "I just went along with everything. But I also trust [the controller] and knew the circumstances, so I had no problems with doing that". Trust is in this way built through the social contact which is established between the players as they start to play (Stenros, 2012).

From the museum perspective, more research is definitely needed to unfold all of the implications of introducing emergence, ambiguity, defamiliarization and intimacy as part of a museum experience. However, I believe that it is already clear that welcoming affective critical play into a museum not only requires designing for trust between participants, it can itself be seen as an act of trust – in this case, the designers' and the museums' trust in visitors' ability to make meaning for themselves and in their ability to navigate the edges of the magic circle.

5.6 Conclusion

In this chapter I have highlighted and discussed five design elements which each express significant qualities of affective critical play. Together with the theoretical discussion in Chapter 3, and the two design exemplars "Monuments" and "Never let me go", these make up what I propose as the concept and practice of *affective critical play*. Emergence, ambiguity, defamiliarization, intimacy and trust are all things that designers of affective critical play need to consider, as they provide both challenges and possibilities. These aspects are not easily separable. Emergence is a consequence of ambiguity, defamiliarization and intimacy provide conditions for ambiguity, and trust is needed on all sides to make all of these happen. The dynamic interrelationship between these design elements would be an interesting and fruitful area for future research.

6. Conclusion

When play is introduced into museums it is often in the form of serious games or interactive installations. This works as a way of containing play and making sure it contributes to the museum's overall educational objectives. However, play can also work as a critical intervention in a museum context. This has been done in the past by artists and activists and is part of a key discourse within museology which takes a critical stance towards ritualised museum practices shaped by ideologies and power structures (Duncan, 1995).

Play as an activity has similarities to ritual. They are both rule-bound and take place separately from ordinary life (Huizinga, 1938/1998). However, there are important differences between the two. In play we appropriate things and explore the boundaries of what is possible. Rituals, on the other hand, involve accepting, adjusting, or conforming to things outside of ourselves (Henricks, 2015b). This is why introducing play into a museum can work as a performative institutional critique.

The experiences we have at museums are often augmented and expanded by the use of digital technology. Hybrid museum experiences are experiences in which the physical museum environment is complemented or overlayed with digital content and affordances. This allows for new perspectives and discourses to be introduced. Hybrid designs can also be used to enhance a museum visit by facilitating exploration, participation and play (Bannon et al., 2005). However, not much work within HCI has taken a critical design approach to hybrid museum experiences which foster play.

In this dissertation, inspired by artistic museum interventions, I have explored the design of hybrid museum experiences for *critical play*. Critical play is a concept introduced by artist and play scholar Mary Flanagan (2009) which refers to play that deliberately seeks to challenge power relations, dominant norms and cultural conventions. In a museum context, critical play can serve as a method of empowering visitors and intensifying their experiences, making them more exciting, more emotional and even transformative. As a result of my research process, I have extended Flanagan's concept, both theoretically and from a design perspective. I have engaged particularly with critical play as an affective and performative technique to experience our capacity for resistance and change in the context of museums. This is what I have put forward in this dissertation as '*affective critical play*'.

My research has been driven by two questions which I have explored through a process of Research through Design (Zimmerman et al., 2007). The first question is: *How can we design for critical play in order to intensify affective encounters in the museum?* To answer this question, I have conducted two design-led studies. The first study took place at the Museum of Yugoslavia in Belgrade, Serbia. This involved the design and implementation of a prototype called "Monuments for a departed future", which included a mobile app and scannable visual markers representing eight different monuments built during the socialist era in Yugoslavia. The markers were placed inside the permanent exhibition, as an added layer in tension with the existing museum collection. After scanning a marker, the players were presented with evocative questions and playful challenges. In this way, the history of the monuments was connected to the players' personal lives outside of the museum. In my second study, the design particularly emphasised the social dynamics of play. "Never let me go" is a two-player experience for art museums which was trialled at the National Gallery of Denmark. By setting up two roles through which one player was in charge of the other player's experience, it fostered an acute awareness of personal, social, cultural and material boundaries of the museum visit.

In this dissertation, in order to answer my first research question, I have highlighted five elements to consider when designing for the intensification of affective encounters in the museum. These are *emergence, ambiguity, defamiliarization, intimacy* and *trust.* Emergence is a consequence of ambiguity. Defamiliarization and intimacy provide conditions for ambiguity, whereas trust is needed for the players to feel safe enough to engage in the experience. The emergence of *meaning, actions* and *affects* provide designers with both opportunities as well as challenges when introduced into a museum context. I have suggested that the challenges can be tackled through designing for a balance between completely free and tightly constrained play. Players need to be given room to make their own interpretations and to decide on how to act. However, constraints can help them to frame their experiences and this in turn gives them an alibi to explore new ways to be in the museum. I have explored *ambiguity* through using open-ended questions, introducing overlapping contexts in the museum, and by putting players in ambiguous roles in relation to each other. I have worked with *defamiliarization* as a way of enabling participants to discover the museum, its collections and each other anew. This has included prompting them to use their imagination and playfulness to see things with new eyes. In a similar manner, I have worked with *intimacy*, not just between players but also between players and their surroundings and through introspection. Lastly, I have highlighted the building of *trust* as a vital element in the design of these types of experiences, due to how people need to feel safe in order to play. Therefore, an important consideration has been how to let participants control their own level of engagement and to make their own choice of how conspicuous or discreet they wish to be, while engaging in small acts of deviation.

In order to build a coherent theoretical framework for designers who wish to engage with affective critical play, I worked with a second research question, which is: *How can critical play be reconceptualized using theories of affect and performativity?* In addressing this question, I have engaged particularly with work by Brian Massumi (2002, 2015), Judith Butler (1993, 1999) and Karen Barad (2003, 2007). I have built on the notion that identity, agency, categorial boundaries and power relations are not fixed nor stable but rather *enacted* and therefore can be played with and eventually transformed (Barad, 2003; Butler, 1993, 1999; Nippert-Eng, 2005). I have proposed that in affective critical play we may explore what Donna Haraway (2019) call "the possible-but-not-yet, or that which is not-yet but still open". From the perspective of affect theory, this can be described as becoming acutely aware of the affective or *in-between* dimension of experience (Massumi, 2002, 2015). Building on this, I have put forward affective critical play as an experience which entails a significant degree of exposure to other living or non-living bodies (Berlant, 2000; Sadowski, 2016) as well as becoming attuned to opportunities in movement, including resistance (Massumi, 2015). Moreover, I have suggested that by making more palpable (in the form of affective intensities) the ongoing reconfigurings of the world (Barad, 2003, 2007) and exposing players to the emergent and the unexpected, affective critical play makes transformation possible (Gordon, 2008).

Museums have an important role to play in preserving our cultural heritage for future generations. However, one of the most critical functions of museums is to make us reflect on the *relationships* we have with the past as well as the present, both on a personal and on a societal level. Therefore, I believe that it is important to consider relational perspectives when designing museum experiences. I hope that designers will take inspiration from my work, and further explore the different ways in which play can be used for this purpose. Moreover, I hope that my notion of affective critical play can be a point of departure for designers, artists and researchers who wish to explore play as an unruly yet powerful critical practice, inside as well as outside the museum.

References

A Giant Bumptious Litter: Donna Haraway on Truth, Technology, and Resisting Extinction. (2019, December 7). *Logic*, *9*. https://logicmag.io/nature/a-giant-bumptious-litter/

Agamben, G. (2007). In Praise of Profanation. In J. Fort (Trans.), *Profanations* (pp. 73–92). MIT Press.

Ahmed, S. (2004). *The Cultural Politics of Emotion*. Routledge.

Anagram. (2015). *Nightwatchers*. http://weareanagram.co.uk/project/nightwatchers

Anagram. (2017). *I Swear to Tell the Truth*. https://weareanagram.co.uk/project/i-swear-to-tell-the-truth

Anthropy, A. (2020). *W.itch.io*. W.Itch.Io. https://w.itch.io/

Apter, M. J. (1991). A structural-phenomenology of play. In M. J. Apter & J. H. Kerr (Eds.), *Adult Play:A Reversal Theory Approach*. Swets & Zeitlinger.

Arrasvuori, J., Boberg, M., & Korhonen, H. (2010). Understanding playfulness: An overview of the revised playful experience (PLEX) framework. *7th International Conference on Design and Emotion*, 1–13.

Austin, J. L. (1975). *How to Do Things with Words* (2nd Edition). Harvard University Press.

Avouris, N., & Yiannoutsou, N. (2012). A review of mobile location-based games for learning across physical and virtual spaces. *Journal of Universal Computer Science*, *18*.

Back, J., Segura, E. M., & Waern, A. (2017). Designing for Transformative Play. *ACM Transactions on Computer-Human Interaction*, *24*(3), 18:1-18:28. https://doi.org/10.1145/3057921

Bakhtin, M. (1984). *Rabelais and His World*. Indiana University Press.

Bakhtin, M. (2008). *Problems of Dostoevsky's Poetics* (M. Holquist, Ed.; C. Emerson, Trans.). University of Texas Press.

Bannon, L., Benford, S., Bowers, J., & Heath, C. (2005). Hybrid Design Creates Innovative Museum Experiences. *Communications of the ACM*, *48*(3), 62–65. https://doi.org/10.1145/1047671.1047706

Barad, K. (2003). Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. *Journal of Women in Culture and Society*, *28*(3), 801–831.

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (2nd ed.). Duke University Press Books.

Bardzell, J., & Bardzell, S. (2013, May 27). What is "Critical" about Critical Design? *CHI 2013: Changing Perspectives*. CHI 2013, Paris, France.

Bardzell, J., & Bardzell, S. (2016). Humanistic HCI. *Interactions*, *23*(2), 20–29. https://doi.org/10.1145/2888576

Bardzell, S. (2010). Feminist HCI: Taking Stock and Outlining an Agenda for Design. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2010)*, 1301–1310.

Barthes, R. (1972). *Mythologies* (A. Lavers, Trans.). Paladin.

Bekker, T., Sturm, J., & Eggen, B. (2010). Designing playful interactions for social interaction and physical play. *Pers. Ubiquitous Comput.*, *14*(5), 385–396.

Benford, S., Greenhalgh, C., Giannachi, G., Walker, B., Marshall, J., & Rodden, T. (2013). Uncomfortable User Experience. *Communications of the ACM*, *56*(9), 66–73. https://doi.org/10.1145/2500889

Bennett, J. (2010). *Vibrant Matter: A Political Ecology of Things*. Combined Academic Publ.

Bennett, T. (1995). *The Birth of the Museum: History, Theory, Politics*. Routledge.

Bentley, T., Johnston, L., & von Baggo, K. (2005). Evaluation using cued-recall debrief to elicit information about a user's affective experiences. *Citizens Online: Considerations for Today and the Future*, 1–10.

Berlant, L. (2000). *Intimacy*. University of Chicago Press.

Bertran Altarriba, F., Segura, E. M., & Isbister, K. (2020, April 25). Technology for Situated and Emergent Play: A Bridging Concept and Design Agenda. *ACM CHI Conference on Human Factors in Computing Systems (CHI 2020)*. CHI 2020, Honolulu, HI, USA.

Bishop, C. (2012). *Artificial Hells. Participatory Art and the Politics of Spectatorship*. Verso.

Blackman, L. (2012). *Immaterial Bodies: Affect, Embodiment, Mediation*. SAGE Publications.

Blast Theory. (2011). *Ghostwriter*. https://www.blasttheory.co.uk/projects/ghostwriter/

Bødker, S. (2006). When second wave HCI meets third wave challenges. *Changing Roles*, 1–8.

Boehner, K., DePaula, R., Dourish, P., & Sengers, P. (2005, August 20). Affect: From Information to Interaction. *Between Sense and Sensibility*. 4th decennial conference on Critical computing, Aarhus, Denmark.

Boehner, K., DePaula, R., Dourish, P., & Sengers, P. (2007). How emotion is made and measured. *International Journal of Human-Computer Studies*, *65*(4), 275–291.

Boehner, K., Sengers, P., & Gay, G. (2006). Affective presence in museums: Ambient systems for creative expression. *Digital Creativity*, *16*(2), 79–89.

Bogost, I. (2010). *Persuasive Games: The Expressive Power of Videogames*. MIT Press.

Bogost, I. (2012). *Alien Phenomenology: Or, What It's Like to be a Thing*. University of Minnesota Press.

Boltanski, L., & Chiapello, E. (2005). *The New Spirit of Capitalism*. Verso.

Braidotti, R. (2013). *The Posthuman*. Polity Press.

Brotchie, A. (1995). *A Book of Surrealist Games* (M. Gooding, Ed.). Shambhala.

Butler, J. (1990). Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. In S.-E. Case (Ed.), *Performing Feminism, Feminist Critical Theory and Theatre* (pp. 270–282). Johns Hopkins University Press.

Butler, J. (1993). *Bodies That Matter*. Routledge.

Butler, J. (1997). *The Psychic Life of Power: Theories in Subjection*. Stanford University Press.

Butler, J. (1999). *Gender Trouble: Feminism and the Subversion of Identity* (2nd ed.). Routledge.

Caillois, R. (2001). *Man, Play and Games*. University of Illinois Press.

Cameron, D. F. (1971). The Museum, a Temple or the Forum. *Curator: The Museum Journal*, *14*(1), 11–24. https://doi.org/10.1111/j.2151-6952.1971.tb00416.x

Chang, A., Resner, B., Koerner, B., Wang, X., & Ishii, H. (2001). LumiTouch: An emotional communication device. *CHI '01 Extended Abstracts on Human Factors in Computing Systems*, 313–314.

Ciolfi, L., Bannon, L. J., & Fernström, M. (2008). Including Visitor Contributions in Cultural Heritage Installations: Designing for Participation. *Museum Management and Curatorship*, *23*(4), 353–365. https://doi.org/10.1080/09647770802517399

Circumstance. (2014). *A Hollow Body*. http://www.ahollowbody.com/

Clough, P. T., & Halley, J. (Eds.). (2007). *The Affective Turn: Theorizing the Social*. Duke University Press.

Cosley, D., Baxter, J., Lee, S., Alson, B., Nomura, S., Adams, P., Sarabu, C., & Gay, G. (2009). A Tag in the Hand: Supporting Semantic, Social, and Spatial Navigation in Museums. *SIGCHI Conference on Human Factors in Computing Systems*, 1953–1962.

Cosley, D., Lewenstein, J., Herman, A., Holloway, J., Baxter, J., Nomura, S., Boehner, K., & Gay, G. (2008). ArtLinks: Fostering Social Awareness and Reflection in Museums. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 403–412. https://doi.org/10.1145/1357054.1357121

Costello, B. M., & Edmonds, E. A. (2007). A Study in Play, Pleasure and Experience Design. *Proceedings of Designing Pleasurable Products and Interfaces Conference*, 76–91.

Counts, S., & Fellheimer, E. (2004). Supporting social presence through lightweight photo sharing on and off the desktop. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 599–606.

Crabtree, A., Chamberlain, A., Grinter, R. E., Jones, M., Rodden, T., & Rogers, Y. (2013). Introduction to the special issue of "The Turn to The Wild". *ACM Transactions on Computer-Human Interaction (TOCHI)*, *20*(3), 13.

Crawford, L. (1984). Viktor Shklovskij: Différance in Defamiliarization. *Comparative Literature*, *36*(3), 209–219.

Critchley, S. (2011). *On Humour (Thinking in Action)*. Routledge.

Dalsgaard, P. (2008). Designing for Inquisitive Use. *Proceedings of the 2008 ACM on Designing Interactive Systems Conference*. DIS 2008.

Dalsgaard, P., & Dindler, C. (2014). Between Theory and Practice: Bridging Concepts in HCI Research. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2014)*, 1635–1644.

Damasio, A. R. (1995). *Descartes' Error: Emotion, Reason, and the Human Brain*. Harper Perennial.

Danto, A. C. (1981). *The Transfiguration of the Commonplace: A Philosophy of Art*. Harvard University Press.

Darzentas, D., Flintham, M., & Benford, S. (2018). Object-focused mixed reality storytelling: Technology-driven content creation and dissemination for engaging user experiences. *Proceedings of the 22nd Pan-Hellenic Conference on Informatics*, 278–281. https://doi.org/10.1145/3291533.3291588

de Souza e Silva, A. (2006). From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces. *Space and Culture*, *9*(3), 261–278. https://doi.org/10.1177/1206331206289022

de Souza e Silva, A., & Sutko, D. M. (Eds.). (2009). *Digital Cityscapes: Merging Digital and Urban Playspaces*. Peter Lang Inc.

de Valk, L., Rijnbout, P., Bekker, T., Eggen, E., de Graaf, M., & Schouten, B. (2012). Designing for playful experiences in open-ended intelligent play environments. *Proceedings of the IADIS International Conference Games and Entertainment Technologies*, 3–10.

Deleuze, G. (2001). *Spinoza: Practical Philosophy* (R. Hurley, Trans.; First Edition in English edition). City Lights Publishers.

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification. Using Game-design Elements in Non-gaming Contexts. *CHI '11 Extended Abstracts on Human Factors in Computing Systems*, 2425–2428. https://doi.org/10.1145/1979742.1979575

Dewey, J. (2005). *Art as Experience*. TarcherPerigee.

DiSalvo, C. (2012). *Adversarial Design*. MIT Press.

Dourish, P. (2004). What We Talk About When We Talk About Context. *Personal and Ubiquitous Computing*, *8*, 19–30.

Duncan, C. (1995). The art museum as ritual. In *Civilizing rituals: Inside public art museums* (pp. 7–18). Routledge.

Dunne, A., & Raby, F. (2001). *Design Noir: The Secret Life of Electronic Object*. Birkhauser.

Eklund, L. (2020). A Shoe Is a Shoe Is a Shoe: Interpersonalization and Meaning-making in Museums – Research Findings and Design Implications. *International Journal of Human-Computer Interaction*. https://doi.org/10.1080/10447318.2020.1767982

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *J Adv Nurs*, *62*(1), 107–115.

Escobar, A. (2018). *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press.

Fine, G. A. (1983). *Shared Fantasy*. University of Chicago Press.

Fischer-Lichte, E. (2008). *The Transformative Power of Performance*. Taylor And Francis.

Flanagan, M. (2009). *Critical Play: Radical Game Design*. The MIT Press.

Fogg, B. J. (2002). *Persuasive Technology: Using Computers to Change What We Think and Do*. Morgan Kaufmann.

Fortunati, L. (2002). Italy: Stereotypes, true and false. In J. Katz (Ed.), *Perpetual contact: Mobile communication, private talk, public performance* (pp. 42–62). Cambridge University Press.

Fosh, L., Benford, S., Reeves, S., & Koleva, B. (2014). Gifting Personal Interpretations in Galleries. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 625–634. https://doi.org/10.1145/2556288.2557259

Fosh, L., Benford, S., Reeves, S., Koleva, B., & Brundell, P. (2013). 'See Me, Feel Me, Touch Me, Hear Me': Trajectories and Interpretation in a Sculpture Garden. *CHI 2013: Changing Perspectives*, 149–158.

Fosh, L., Lorenz, K., Benford, S., & Koleva, B. (2015). Personal and social? Designing personalised experiences for groups in museums. *MW2015: Museums and the Web 2015*. MW2015: Museums and the Web 2015, Chicago, IL. http://mw2015.museumsandtheweb.com/paper/personal-and-social-designing-personalised-experiences-for-groups-in-museums/

Frauenberger, C. (2019). Entanglement HCI The NextWave? *ACM Transactions on Computer-Human Interaction*.

Friedman, B. (Ed.). (1997). *Human values and the design of computer technology*. Cambridge University Press and CSLI, Stanford University.

Fritsch, J. (2018). Affective Interaction Design at the End of the World. *DRS 2018: Catalyst*, 896–908.

Fusco, C. (1994). The Other History of Intercultural Performance. *TDR (1988-)*, *38*(1), 143–167.

Fusco, C., & Gómez-Peña, G. (1992). *The Couple in a Cage: Two Amerindians Visit the West* [Performance]. https://walkerart.org/magazine/guillermo-gomez-pena-and-coco-fuscos-the-year-of-the-white-bear

Gaver, B. (2009). Designing for Homo Ludens, Still. In T. Binder, J. Löwgren, L. Malmborg, J. Löwgren, & L. Malmborg (Eds.), *(Re)Searching The Digital Bauhaus* (pp. 163–178). Springer London. https://doi.org/10.1007/978-1-84800-350-7_9

Gaver, B., & Bowers, J. (2012). Annotated portfolios. *Interactions*, *19*(4), 40–49.

Gaver, B., & Strong, R. (1996). Feather, Scent, and Shaker: Supporting Simple Intimacy. *Proceedings of CSCW'96, New York, NY, USA*, 16–20.

Gaver, W. (2002). *Designing for homo ludens*. 2–5.

Gaver, W. (2009, December). Designing for emotion (among other things). *Philosophical Transactions of The Royal Society B Biological Sciences*, *364*(1535), 3597–3604.

Gaver, W. (2012). What Should We Expect from Research Through Design? *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 937–946. https://doi.org/10.1145/2207676.2208538

Gaver, W., Beaver, J., & Benford, S. (2003). *Ambiguity as a Resource for Design*. 5, 233–240. https://dl.acm.org/doi/10.1145/642611.642653

Gaver, W., Bowers, J., Boucher, A., Gellerson, H., Pennington, S., Schmidt, A., Steed, A., Villars, N., & Walker, B. (2004). The Drift Table: Designing for Ludic Engagement. *CHI '04 Extended Abstracts on*

Human Factors in Computing Systems, 885–900. https://doi.org/10.1145/985921.985947

Giorgi, A. (1997). The theory, practice, and evaluation of phenomenological method as a qualitative research practice procedure. *Journal of Phenomenological Psychology*, *28*(2), 235–260.

Goffman, E. (1961). *Encounters: Two Studies in the Sociology of Interaction*. Bobbs-Merrill.

Goodman, E., & Misilim, M. (2003). The Sensing Beds. *Proceedings of UbiComp, Workshop*. UbiComp 2003.

Gordon, G. (2008). What is play? In search of a definition. In D. Kuschner (Ed.), *From children to Red Hatters: Diverse images and issues of play* (Vol. 8, pp. 1–13). University Press Of America.

Grace, L. (2014). Critical Games: Critical Design in Independent Games. *Proceedings of DiGRA 2014*. DiGRA 2014.

Gregg, M., & Seigworth, G. J. (Eds.). (2010). *The Affect Theory Reader*. Duke University Press.

Grivas, K. (2006). Digital Selves: Devices for intimate communications between homes. *Personal and Ubiquitous Computing*, *10*(2), 66–76.

Guattari, F. (1996). Ritornellos and existential affects. In F. Guattari & G. Genosko (Eds.), *The Guattari Reader* (pp. 158–171). Blackwell Publishers.

Guerrilla Girls. (n.d.). Guerrilla Girls. Retrieved 26 August 2020, from https://www.guerrillagirls.com

Hammarberg, K., Kirkman, M., & de Lacey, S. (2016). Qualitative research methods: When to use them and how to judge them. *Human Reproduction*, *31*(3), 498–501.

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies*, *14*(3), 575–599.

Haraway, D. (2008). *When Species Meet*. University of Minnesota Press.

Haraway, D. (2016). *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press Books.

Hardt, M. (2007). Foreword: What affects are good for. In P. T. Clough & J. Halley (Eds.), *The affective turn: Theorizing the social*. Duke University Press.

Harrison, S. R., Sengers, P., & Tatar, D. G. (2011). Making epistemological trouble: Third-paradigm HCI as successor science. *Interacting with Computers*, *23*, 385–392.

Harrison, S. R., Tatar, D. G., & Sengers, P. (2007). The Three Paradigms of HCI. *Proceedings of SIGCHI Conference on Human Factors in Computing Systems*. alt.chi at CHI 2007, San Jose, California, USA.

Hatala, M., & Wakkary, R. (2005). Ontology-based user modeling in an augmented audio reality system for museums. *UMUAI*, *15*(3–4), 339–380.

Hazzard, A., Benford, S., & Burnett, G. (2015). Sculpting a mobile music soundtrack. *SIGCHI Conference on Human Factors in Computing Systems*, 387–396.

Hein, G. E. (1998). *Learning in the Museum*. Routledge.

Hein, G. E. (2006). Museum education. In S. MacDonald (Ed.), *A Companion to Museum Studies* (pp. 340–352). Blackwell.

Henricks, T. S. (2009). Orderly and Disorderly Play. *American Journal of Play*, *2*(1), 12–40.

Henricks, T. S. (2015a). Play as Experience. *American Journal of Play*, *8*(1).

Henricks, T. S. (2015b). *Play and the Human Condition*. University of Illinois Press.

Hillis, K., Paasonen, S., & Petit, M. (Eds.). (2015). *Networked affect*. MIT Press.

Hillman, T., & Weilenmann, A. (2015). Situated Social Media Use: A Methodological Approach to Locating Social Media Practices and Trajectories. *Proceedings of the ACM CHI'15 Conference on Human Factors in Computing Systems*, 4057–4060. https://doi.org/10.1145/2702123.2702531

Höök, K. (2006). Designing familiar open surfaces. *Fourth Nordic Conference on Human-Computer Interaction*, 242–251.

Höök, K., Ståhl, A., Sundström, P., & Laaksolahti, J. (2008). Interactional empowerment. *ACM CHI 2008 Conference on Human Factors in Computing Systems*, 647–656.

Hooper-Greenhill, E. (2000). *Museums and the Interpretation of Visual Culture*. Routledge.

Hornecker, E., & Ciolfi, L. (2019). Human-Computer Interactions in Museums. *Synthesis Lectures on Human-Centered Informatics*, *12*(2), i–171. https://doi.org/10.2200/S00901ED1V01Y201902HCI042

Huizinga, J. (1998). *Homo Ludens: A study of the play-element in culture*. Routledge.

Hunicke, R., LeBlanc, M., & Zubek, R. (2004). MDA: A Formal Approach to Game Design and Game Research. *Proceedings of AAAI Workshop on Challenges in Games*. AAAI 2004.

Hutta, J. S. (2015). The affective life of semiotics. *Geogr. Helv.*, *70*, 295–309.

ICOM Code of Ethics for Museums. (2017). International Council of Museums (ICOM). https://icom.museum/wp-content/uploads/2018/07/ICOM-code-En-web.pdf

Ihde, D. (1990). *Technology and the Lifeworld: From Garden to Earth*. Indiana University Press.

Isbister, K., Höök, K., Sharp, M., & Laaksolahti, J. (2006). The Sensual Evaluation Instrument: Developing an Affective Evaluation Tool. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1163–1172. https://doi.org/10.1145/1124772.1124946

Isbister, K., Márquez Segura, E., & Melcer, E. F. (2018). Social Affordances at Play: Game Design Toward Socio-Technical Innovation. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2018)*. CHI 2018, Montréal, QC, Canada.

Juul, J. (2005). *Half-Real Video Games between Real Rules and Fictional Worlds*. MIT Press.

Kaye, J. 'Jofish'. (2006). I just clicked to say I love you: Rich evaluations of minimal communication. *Proceedings of CHI '06 Extended Abstracts on Human Factors in Computing Systems*, 363–368.

Kidd, J. (2018). "Immersive" heritage encounters. *The Museum Review*, *3*(1).

Kim, B. (2015). Chapter 4. Gamification in Education and Libraries. *Library Technology Reports*, *51*(2).

Kisner, M. J. (2013). *Spinoza on Human Freedom: Reason, Autonomy and the Good Life*. Cambridge University Press.

Korhonen, H., Montola, M., & Arrasvuori, J. (2009). Understanding Playful Experiences Through Digital Games. *Proceedings of the 4th*

International Conference on Designing Pleasurable Products and Interfaces, 274–285.

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J., & Wensveen, S. (2011). *Design Research Through Practice: From the Lab, Field, and Showroom*. Morgan Kaufmann.

Kozel, S. (2008). *Closer: Performance, Technologies, Phenomenology*. The MIT Press.

Kozel, S. (2012). AffeXity: Performing Affect with Augmented Reality. *The Fibreculture Journal, 21*.

Krogh, P. G., Markussen, T., & Bang, A. L. (2015). Ways of Drifting – 5 Methods of Experimentation in Research through Design. *Proceedings of ICoRD'15 - Research into Design Across Boundaries, 1*.

Krogh, P., & Petersen, M. G. (2009). Design articulation for Aesthetics of Interaction. In *Proc. DPPI 2009*. ACM Press.

Latour, B. (2004). How to talk about the body? The normative dimensions of science studies. *Body and Society, 10*(2/3), 205–230.

Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford University Press.

Ledoux, J. (1996). *The Emotional Brain: The mysterious underpinnings of emotional life*. Simon and Schuster.

Light, A. (2011). HCI as heterodoxy: Technologies of identity and the queering of interaction with computers. *Interacting with Computers, 23*, 430–438.

Linehan, C., & Kirman, B. (2014). Never Mind the Bollocks, I Wanna Be AnarCHI: A Manifesto for Punk HCI. *Proceedings of the 32nd International Conference on Human Factors in Computing Systems (CHI 2014)*, 741–748.

Lovink, G. (2003). *Dark Fiber: Tracking Critical Internet Culture*. MIT Press.

Luhmann, N. (2012). *Introduction to Systems Theory*. Polity.

Magerkurth, C., Cheok, A. D., Mandryk, R., & Nilsen, T. (2005). Pervasive games: Bringing computer entertainment back to the real world. *ACM Computers in Entertainment, 3*(3), 1–19.

Markopoulos, P., Romero, N., von Baren, J., Ijsselsteijn, W. A., de Ruyter, B., & Farshchian, B. A. (2004). Keeping in touch with the family:

Home and away with the ASTRA awareness system. *Extended Abstracts on Human Factors in Computing Systems*, 1351–1354.

Márquez Segura, E., Waern, A., Márquez Segura, L., & López Recio, D. (2016). Playification: The PhySeEar case. *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*, 376–388.

Márquez Segura, E., Waern, A., Moen, J., & Johansson, C. (2013). The design space of body games: Technological, physical, and social design. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 3365–3374.

Marshall, M. T., Dulake, N., Ciolfi, L., Duranti, D., Kockelkorn, H., & Petrelli, D. (2016). Using tangible smart replicas as controls for an interactive museum exhibition. *TEI 2016 - Proceedings of the 10th Anniversary Conference on Tangible Embedded and Embodied Interaction*, 159–167. https://doi.org/10.1145/2839462.2839493

Marshall, M. T., Dulake, N., Petrelli, D., & Kockelkorn, H. (2015). From the Deposit to the Exhibit Floor: An Exploration on Giving Museum Objects Personality and Social Life. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*, 1917–1922. https://doi.org/10.1145/2702613.2732872

Massumi, B. (2002). *Parables for the Virtual: Movement, Affect, Sensation*. Duke University Press.

Massumi, B. (2015). *Politics of Affect*. Polity Press.

McCarthy, J., & Wright, P. (2007). *Technology as Experience*. The MIT Press.

McCarthy, J., Wright, P., Wallace, J., & Dearden, A. (2006). The experience of enchantment in human–computer interaction. *Pers Ubiquit Comput*, *10*, 369–378.

McGonigal, J. (1999). *This Might Be a Game: Ubiquitous Play and Performance at the Turn of the Twenty-First Century*. University of California, Berkeley.

Mees, A. (2011). Art Heist, 2010: An Interactive Adventure by Coney. In K. Beale (Ed.), *Museums at Play: Games, Interaction and Learning* (pp. 84–95). MuseumsEtc.

Meyers, R. (2016). Is It Just Text? In *Teletext in Europe: From the Analog to the Digital Era* (pp. 31–49). Nordicom.

Montola, M. (2005). Exploring the edge of the magic circle: Defining pervasive games. *Digital Experience: Design, Aestethics, Practice*.

Mouffe, C. (2000). *The Democratic Paradox*. Verso Books.

Mueller, F., Vetere, F., Gibbs, M. R., Kjeldskov, J., Pedell, S., & Howard, S. (2005). Hug over a distance. *CHI '05 Extended Abstracts on Human Factors in Computing Systems*, 1673–1676.

Mulcahy, D. (2016). 'Sticky' learning: Assembling bodies, objects and affects at the museum and beyond. In J. Coffey, S. Budgeon, & H. Cahill (Eds.), *Learning Bodies: The Body in Youth and Childhood Studies* (pp. 207–222). Springer.

Nicholson, S. (2012). *A User-Centered Theoretical Framework for Meaningful Gamification*. Games+Learning+Society 8.0, Madison, WI. http://scottnicholson.com/pubs/meaningfulframework.pdf

Nippert-Eng, C. (2005, August). Boundary Play. *Space and Culture*, *8*(3), 302–324.

Norman, D. A. (2004). *Emotional Design: Why We Love (Or Hate) Everyday Things*. Basic Books.

Orlikowski, W. J. (2010). The sociomateriality of organisational life: Considering technology in management research. *Cambridge Journal of Economics*, *34*(1), 125–141.

Paasonen, S. (In Press). Affect. In K. Ross (Ed.), *The International Handbook of Gender, Media, and Communication*. Wiley.

Paasonen, S. (2018). *Many Splendored Things*. Goldsmiths Press.

Palmer, H., & Hunter, V. (2018, March 16). *New Materialism*. Worlding. https://newmaterialism.eu/almanac/w/worlding.html

Panksepp, J. (1998). *Affective Neuroscience: The Foundations of Human and Animal Emotions*. Oxford University Press.

Paxton, S. (1979). A Definition. *Contact Quarterly*, *4*(2).

Pedercini, P. (2020). *Molleindustria*. https://www.molleindustria.org/

Petrelli, D., & Not, E. (2005). User-centred design of flexible hypermedia for a mobile guide: Reflections on the hyperaudio experience. *User Modeling and User-Adapted Interaction*, *15*(3–4), 303–338.

Picard, R. (1997). *Affective Computing*. MIT Press.

Poremba, C. (2007). Critical Potential on the Brink of the Magic Circle. *2007 International DiGRA Conference*, 772–778.

Preston, W., Benford, S., Thorn, E.-C., Koleva, B., Rennick-Egglestone, S., Mortier, R., Quinn, A., Stell, J., & Worboys, M. (2017). Enabling Hand-Crafted Visual Markers at Scale. *Proceedings of the 2017 Conference on Designing Interactive Systems*, 1227–1237. https://doi.org/10.1145/3064663.3064746

Raley, R. (2009). *Tactical Media*. University of Minnesota Press.

Rennick-Egglestone, S. J., Brundell, P., Koleva, B., Benford, S., Roussou, M., & Chaffardon, C. (2016). Families and mobile devices in museums: Designing for integrated experiences. *ACM Journal on Computing and Cultural Heritage*, *9*. https://doi.org/10.1145/2891416

Rosenberger, R. (2012). Embodied technology and the dangers of using the phone while driving. *Phenomenology and the Cognitive Sciences*, *11*(1), 79–94.

Rosenberger, R. (2013). The Problem with Hands-Free Dashboard Cell Phones. *Communications of the ACM*, *56*(4), 38–40.

Rosenberger, R., & Verbeek, P.-P. (Eds.). (2017). *Postphenomenological Investigations: Essays on Human–Technology Relations*. Lexington Books.

Rounds, J. (2006). Doing identity work in museums. *Curator: The Museum Journal*, *49*(2), 133–150.

Sadowski, H. (2016). *Digital Intimacies: Doing Digital Media Differently* [PhD Thesis, Linköping University]. http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-132634

Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. MIT press. https://www.google.com/books?hl=da&lr=&id=UM-xyczrZuQC&oi=fnd&pg=PP13&dq=rules+of+play+zimmerman&ots=2AHFBZbF-o&sig=Hp4hC5f67hvy4DoceAg6ac9MASg

Schechner, R. (1988). *Performance Theory*. Routledge.

Schiphorst, T., Nack, F., KauwATjoe, M., de Bakker, S., Stock, Aroyo, L., Rosillio, A. P., Schut, H., & Jaffe, N. (2007). PillowTalk: Can we afford intimacy? *Proceedings of the 1st International Conference on Tangible and Embedded Interaction*, 23–30. https://doi.org/10.1145/1226969.1226975

Schrank, B. (2014). *Avant-garde Videogames: Playing with Technoculture*. MIT Press.

Sedgwick, E. K. (2003). *Touching Feeling: Affect, Pedagogy, Performativity*. Duke University Press.

Sengers, P., Boehner, K., David, S., & Kaye, J. 'Jofish'. (2005). Reflective design. *Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility*, 49–58.

Sengers, P., & Gaver, B. (2006). Staying open to interpretation: Engaging multiple meanings in design and evaluation. *Proceedings of the 6th Conference on Designing Interactive Systems*, 99–108. https://doi.org/10.1145/1142405.1142422

Sharma, M., Kacker, S., & Sharma, M. (2016, December). *A Brief Introduction and Review on Galvanic Skin Response*. *2*(6), 13–17.

Shelton, A. (2013). Critical Museology: A Manifesto. *Museum Worlds*, *1*(1), 7–23. https://doi.org/10.3167/armw.2013.010102

Sicart, M. (2014). *Play Matters*. MIT Press.

Sicart, M. (2020). Playing software: The role of the ludic in the software society. *Information, Communication & Society*, 1468–4462.

Sicart (Vila), M. A. (2011). Against Procedurality. *Game Studies*, *11*(3).

Soren, B. J. (2009). Museum experiences that change visitors. *Museum Management and Curatorship*, *24*(3), 233–251.

Spence, J. (2016). *Performative Experience Design*. Springer.

Spence, J., Bedwell, B., Coleman, M., Benford, S., Koleva, B. N., Adams, M., Farr, J. R., Tandavanitj, N., & Løvlie, A. S. (2019). Seeing with New Eyes: Designing for In-the-Wild Museum Gifting. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2019)*. CHI 2019, Glasgow, Scotland, UK. https://doi.org/10.1145/3290605.3300235

Spence, J., Bedwell, B., Coleman, M., Benford, S., Koleva, B. N., Adams, M., Row Farr, J., Tandavanitj, N., & Løvlie, A. S. (2019). Seeing with New Eyes: Designing for In-the-Wild Museum Gifting. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–13. https://doi.org/10.1145/3290605.3300235

Stappers, P., & Giaccardi, E. (2011). Research through Design. In M. Soegaard & R. F. Dam (Eds.), *Research through Design*. Interaction

Design Foundation. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/research-through-design

Stenros, J. (2012). In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play. *2012 International DiGRA Nordic Conference*, *10*, 1–19.

Stephenson, B. (2015). *Ritual: A Very Short Introduction*. Oxford University Press.

Stock, O., Zancanaro, M., Busetta, P., Callaway, C., Krüger, A., Kruppa, M., Kuflik, T., Not, E., & Rocchi, C. (2007). Adaptive, intelligent presentation of information for the museum visitor in PEACH. *User Modeling and User-Adapted Interaction*, *17*(3), 257–304. https://doi.org/10.1007/s11257-007-9029-6

Stolterman, E., & Wiberg, M. (2010). Concept-Driven Interaction Design Research. *HUMAN–COMPUTER INTERACTION*, *25*(0737–0024), 95–118. https://doi.org/10.1080/07370020903586696

Strategic plan 2014-2018 Museum of Yugoslav History. (2014).

Suchman, L. (1987). *Plans and Situated Actions*. Cambridge University Press.

Sundström, P., Ståhl, A., & Höök, K. (2007). In situ informants exploring an emotional mobile messaging system in their everyday practice. *International Journal of Human-Computer Studies*, *65*(4), 388–403.

Surtees, J. (2013, June 8). *Spomeniks: The second world war memorials that look like alien art* [Newspaper]. The Guardian. https://www.theguardian.com/artanddesign/photography-blog/2013/jun/18/spomeniks-war-monuments-former-yugoslavia-photography

Sutton-Smith, B. (2001). *The Ambiguity of Play*. Harvard University Press; Revised ed. edition.

Sutton-Smith, B., & Kelly-Byrne, D. (1987). *Masks of Play*. Human Kinetics Publishers.

Tallon, L., & Walker, K. (Eds.). (2008). *Digital Technologies and the Museum Experience: Handheld Guides and Other Media*. AltaMira Press.

Taylor, R., Bowers, J., Nissen, B., Wood, G., Chaudry, Q., Wright, P., Bruce, L., Glynn, S., Mallinson, H., & Bearpark, R. (2015). Making Magic: Designing for Open Interactions in Museum Settings. *Proceedings of the 2015 ACM SIGCHI Conference on Creativity and Cognition*, 313–322.

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Penguin Books.

Thrift, N. (2008). *Non-Representational Theory: Space Politics and Affect.* Routledge.

Tieben, R., Bekker, T., & Schouten, B. (2011). Curiosity and interaction: Making people curious through interactive systems. *Proceedings of the 25th BCS Conference on Human-Computer Interaction*, 361–370.

Tollmar, K., Junestrand, S., & Torgny, O. (2000). Virtually living together: A design framework for new communication media. *In Proceedings of the 3rd Conference on Designing Interactive Systems*, 83–91.

Tolmie, P., Benford, S., Greenhalgh, C., Rodden, T., & Reeves, S. (2014). Supporting Group Interactions in Museum Visiting. *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 1049–1059. https://doi.org/10.1145/2531602.2531619

Tomkins, C. (1996). *Duchamp: A Biography*. Henry Holt & C.

Tomkins, S. S. (1962). *Affect Imagery Consciousness: The Positive Affects (Vol. 1)*. Springer.

Tomkins, S. S. (1963). *Affect Imagery Consciousness: The Negative Affects (Vol. 2)*. Springer.

Tsing, L., Anna. (2017). *The Mushroom at the End of the World*. Princeton University Press.

Turner, V. (1974). Liminal to Liminoid, in Play, Flow, and Ritual: An Essay in Comparative Symbology. *Rice Institute Pamphlet - Rice University Studies, 60*(3).

Vayanou, M., Antoniou, A., Loumos, G., Kargas, A., Kakaletris, G., & Ioannidis, Y. (2019). Towards Personalized Group Play in Gallery Environments. *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*, 739–746. https://doi.org/10.1145/3341215.3356313

Vayanou, M., Ioannidis, Y., Loumos, G., & Kargas, A. (2019). How to play storytelling games with masterpieces: From art galleries to hybrid board games. *Journal of Computers in Education*, *6*(1), 79–116. https://doi.org/10.1007/s40692-018-0124-y

Verbeek, P.-P. (2005). *What things do. Philosophical reflections on technology, agency, and design.* Penn State University Press.

Vergo, P. (1989). *The New museology*. Reaktion Books.

Vlahakis, V., Pliakas, T., Demiris, A. M., & Ioannidis, N. (2003). Design and Application of an Augmented Reality System for continuous, context-sensitive guided tours of indoor and outdoor cultural sites and museums. *VAST*, 155–164. http://lifeplus.miralab.unige.ch/html/papers/LIFEPLUS-VAST2003-revised.pdf

Wakkary, R., & Hatala, M. (2007). Situated play in a tangible interface and adaptive audio museum guide. *Personal and Ubiquitous Computing*, *11*(3), 171–191. https://doi.org/10.1007/s00779-006-0101-8

Wallace, J., Thieme, A., Wood, G., Schofield, G., & Olivier, P. (2012). Enabling self, intimacy and a sense of home in dementia. *Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems*, 2629–2638. https://doi.org/10.1145/2207676.2208654

Wilson, A. (2016). The Infrastructure of Intimacy. *Signs: Journal of Women in Culture and Society*, *41*(2), 247–280. https://doi.org/10.1086/682919

Wilson, D. (2011). Brutally unfair tactics totally ok now: On self-effacing games and unachievements. *Game Studies*, *11*(1).

Witcomb, A. (2013). Understanding the role of affect in producing a critical pedagogy for history museums. *Museum Management and Curatorship*, *28*(3), 255–271. https://doi.org/10.1080/09647775.2013.807998

Witcomb, A. (2014). 'Look, Listen and Feel': The first peoples exhibition at the Bunjilaka Gallery, Melbourne Museum. *Thema La Revue Des Musées de La Civilistion*, *1*, 49–62.

Witcomb, A. (2015). Cultural pedagogies in the museum: Walking, listening and feeling. In M. Watkins, G. Noble, & C. Driscoll (Eds.), *Cultural Pedagogies and Human Conduct* (pp. 158–170). Routledge.

Wright, P., Wallace, J., & McCarthy, J. (2008). Aesthetics and experience-centered design. *ACM Transactions on Computer-Human Interaction (TOCHI), 15*(4), 1–21. https://doi.org/10.1145/1460355.1460360

yellow brick. (2017). *Traces*. https://www.yellobrick.co.uk/portfolio/traces

Yiannoutsou, N., Papadimitriou, I., Komis, V., & Avouris, N. (2009). “Playing with” Museum Exhibits: Designing Educational Games Mediated by Mobile Technology. *IDC 2009 – Short Papers*, 230–233.

Zimmerman, J., Forlizzi, J., & Evenson, S. (2007). Research Through Design As a Method for Interaction Design Research in HCI. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 493–502. https://doi.org/10.1145/1240624.1240704

Paper 1:

Monuments for a Departed Future: Designing for Critical Engagement with an Ideologically Contested Museum Collection.

Ryding, K. & Løvlie, A. S.

Published in:
In selected papers and proceedings of the 2018 conference 'Museums and the Web' (MW18). Silver Spring, MD: Museums and the Web

MONUMENTS FOR A DEPARTED FUTURE: DESIGNING FOR CRITICAL ENGAGEMENT WITH AN IDEOLOGICALLY CONTESTED MUSEUM COLLECTION

Karin Ryding

Anders Sundnes Løvlie

Abstract

The increasing spread of smartphones gives new opportunities for museums dealing with ideologically contested collections. In this paper we explore how playful interactions and user comments can be used to encourage critical engagement with museum collections. This is done through a research through design experiment at the Museum of Yugoslavia, which houses the grave of the former communist leader Josep Tito. Building on earlier work by Mary Flanagan (2009) and Andrea Witcomb (2013), we present a playful design that utilizes Artcodes (Preston et al. 2017) to connect the physical museum exhibits with a digital experience of modernist monuments erected at various sites around the former territory of Yugoslavia during the socialist era. The design has been tested through two iterations on museum visitors and a group of experts on digital museum communication, leading to suggestions for future critical designs centered on playful intervention and poetic provocations.

Introduction

In recent years there has been an increasing interest in the design and production of digital interactions for museums (Parry 2010). This development is often seen in light of a broader change in the role of the museum in modern society, towards an increased emphasis on participation and sharing (Sanderhoff 2014; Simon 2010). At the same time, the complexity of relations and demands museums face today often produce tensions, debates and “museum frictions” (Karp et al. 2006). Political contestations of how exhibitions implicitly make statements about history and identity put pressure on museums to facilitate visitor dialogue and support ways to engage critically with collections. The aim of this paper is to discuss how museums can design for critical encounters with exhibited content, while giving room for different interpretations and attitudes - especially when collections are ideologically contested.

Complicating the forum ideal of the contemporary museum (Cameron 1971), media scholars and professionals have raised concerns about participation through online comments and social media (Coleman 2012; Crockett 2017; Erjavec and Kovacic 2012; Sunstein 2017). Backlashes against online comments have taken place in several countries and contexts (Ahva and Hautakangas 2017; LaBarre 2013; Løvlie, Ihlebæk, and Larsson 2017), leading WIRED to recently declare "the end of the comments" (Finley 2015). From a design perspective, this is often seen as a "filtering" problem, emphasizing negative control measures. In this paper, we present an alternative approach, designing a carefully framed user experience in order to positively encourage meaningful user contributions.

The case study through which this subject-matter is explored is a design experiment that took place at the Museum of Yugoslavia in Belgrade, Serbia, in June 2017 as part of a research project funded by the Horizon 2020 programme of the European Union. We developed and tested a prototype called “Monuments for a departed future”, using Artcodes – an image recognition technology enabling the use of machine readable markers of one’s own design (Preston et al. 2017) – in order to connect the physical exhibition to a digital experience, aiming to facilitate critical play.

Museum of Yugoslavia

The Museum of Yugoslavia, situated in the Serbian capital, has more than 100,000 visitors a year and is the most visited museum in Serbia. The museum is located on the grounds of the former communist leader Josip Broz Tito's palace, and houses the grave of Tito and his wife in a memorial space named “The House of Flowers”. The museum presents a wide range of artifacts and stories connected with Tito's life and work, creating an atmosphere of solemn devotion to a man who was a dictator of former Yugoslavia for more than 30 years. Many visitors come to the museum with the main intention to pay their respects. However, the museum aims to adopt a progressive approach, presenting a broad view of the history of the Yugoslav republics. Therefore, the dominating presence of Tito's legacy presents a challenge. The museum’s strategic plan states:

> Principles, values, interpretation and even heritage itself are changeable categories which are created in relation to the contemporary context – ideology, politics, the economy and scientific models. Because of this, we encourage CRITICAL THINKING and presentation of diverse views of the same events, documents or data. (“Strategic Plan 2014-2018 Museum of Yugoslav History” 2014, caps in the original)

There appears to be a potential conflict between the museum's content, and the museum’s aim to encourage critical thinking. Finding ways to more clearly express the museum’s values is a pressing matter, made urgent by the painful memory of the violent breakdown of Yugoslavia and the deep trauma of civil war hanging over the institution.

Design strategies for critical engagement in museums

Critical design is an emergent field within human-computer interaction (Dunne 2006; Gaver et al. 2004), which, rather than serving users' needs, encourages users to question their everyday lives. Dunne and Raby suggest a strategy of provocative design: "A slight strangeness is the key—too weird and they are instantly dismissed, not strange enough and they're absorbed into everyday reality" (Dunne and Raby 2001, 63).

Much research has been done on mobile experiences for museums. Many studies deal with user experience (Røtne and Kaptelinin 2013), evaluation methods (Damala 2006), technology (Rubino et al. 2013) or play in the museum (Beale 2011). Some designers have created play experiences in order to challenge conventions and perceptions of heritage and museum exhibitions (Kahr-Højland 2010; McGonigal 2010; Mees 2011).

Through their extensive collaboration with artist groups such as Blast Theory, Benford and Giannachi (2011) have explored a number of design approaches emphasizing provocation and challenging user experiences. These complex experiences take participants on journeys through space, time, interfaces and roles. Benford and Giannachi put forward the concept of "trajectories" (Benford et al. 2009) as a useful tool to describe the continuous journeys that participants follow through an experience.

Research on online comments in the fields of media and communication has often explored the challenge of incivility and harassment (Coe, Kenski, and Rains 2014; Muddiman and Stroud 2017; Rowe 2015; Sobieraj and Berry 2011). Some research has also focused on the influence of system features and editorial policies on the deliberative quality of comments (Canter 2013; Kies 2010; Ruiz et al. 2011; Wright and Street 2007). Much research on online comments has focused on the problems and benefits of allowing anonymous participation (boyd 2012; Elgesem and Nordeide 2016; Santana 2014). Design-based research into designing online communities emphasizes the need to balance encouraging contributions against regulating user behavior (Kraut et al. 2011). Birchall and Coleman (2015) similarly suggest that balancing between appealing to the commenters' passions, and "encouraging some degree of dispassionate rationality" is one of the core challenges for what they term "deliberative design".

Mary Flanagan (2009) suggests the concept critical play to describe the challenge of creating compelling play environments using the elaborate concepts of critical thinking. Drawing from art history, she suggests learning from the practice of interventions in performance or activist art. Such interventions typically aim to interfere in or disrupt a specific situation, space or activity in order to put attention to certain issues. Flanagan suggests a model for designing for critical play which addresses intervention, disruptions and social issues as design goals.

In the field of Museum Studies, Andrea Witcomb (2013) has discussed how history museums can enable a form of historical consciousness that encourages critical engagement with the past. Affective strategies of interpretation are to be preferred, she argues, when it comes to dealing with subject matter such as genocide, imprisonment, colonialism, racism, and war. She points to sensorial, embodied museum experiences which may trigger emotional responses, rather than exhibitions that use explicit rational, information-based content on linear display. By poetically producing unsettling experiences, they require visitors to engage both emotionally and intellectually. While Witcomb's study focuses on physical installations, we are interested in exploring how similar experiences could be facilitated by a design which links physical installations to a digital smartphone app.

Methodology

The study at hand applies a research through design methodology (Roedl and Stolterman 2013; Zimmerman, Forlizzi, and Evenson 2007), to study the ideologically contested collections of the Museum of Yugoslavia. Applying a critical design approach, we explore how to facilitate critical play in the context of the Museum of Yugoslavia's presentation of Yugoslav history.

Our collaboration with the Museum of Yugoslavia was initiated by one of our partners in the research project, a design studio based in Belgrade. Together we set up a two-day workshop with representatives from the museum 22-23 March 2017, in order to discuss ideas for playful physical-digital experiences at the museum. In the following months, we engaged in a design process where the Belgrade design studio and our team developed a number of concepts in close collaboration, resulting in two prototypes, one of which was the Monuments for a Departed Future.

Two sessions were carried out to test the result of the prototyping process; one with four art history students from University of Belgrade, and one with a group of nine experts (researchers, designers and museum professionals) from the Horizon 2020 project. The student testers were recruited through the local design studio. The first session took place on 19th June followed by semi-structured qualitative interviews. The interviews focused on the tester's experiences of using the prototype within the museum environment and were carried out according to the phenomenological interviewing method (Bevan 2014). The reason for choosing this method was to gather data that when analyzed could provide an understanding of how testers made meaning of their experience (Jackson 1998). The second test took place on 28th June as part of a workshop with partners in the research project, and was followed by a group discussion. Audio from the interviews was recorded, and transcribed for analysis along with written feedback statements from each of the experts. We have also done a qualitative analysis of 105 answers that the test participants submitted to questions in the app.

Monuments for a departed future

In our work with the design experiment, we searched for a theme that would serve as a critical point of entry to the Museum of Yugoslavia and its exhibitions, and which would open up for a range of perspectives on the history of the former country. We found a suitable topic in the socialist monuments placed all over former Yugoslavia – internationally known as the 'Spomeniks' (Surtees 2013). These monuments are sites of ideological battles and offer rich possibilities of interpretations. The subject-matter of the monuments was discussed and further developed in a second workshop at the museum, after which we developed a prototype app.

The 'Spomeniks': Monuments to a conflicted history

The 'Spomeniks' were built during the period from 1960 to the early 1980s, most often to serve as memorials of the Second World War. Remembering the victims of the war and the fight against fascism was an important part of the cultural and political messaging of socialist Yugoslavia (Putnik 2016). The monuments have a distinct aesthetical style; a result of the turn to a less radical socialist politics in the 1950s that produced an artistic freedom in the search for a new Yugoslav identity. During the socialist era, they were popular sites of tourism, as well as school excursions. This shifted radically during the 1990s when the turn to nationalism brought a change in the perception of the monuments, which were now seen as symbols of a conflicting and ideologically undesired past. This lead to their destruction or abandonment (Etkind 2004; Potkonjak and Pletenac 2007). During the last decade, the monuments have been rediscovered by an international audience through the work of Belgian photographer Jan Kempenaers (2010). His eerie photographs were soon spread globally over blogs, websites and social media with headlines such as 'alien art', 'abandoned monuments' and 'the end of history' (Putnik 2016). The international fame of the memorials also led to increased recognition of the monuments domestically.

The prototype

While the Museum of Yugoslavia hosted a touring exhibition about the Spomeniks in 2016, they are not represented in the permanent exhibition at the museum. In order to give these forgotten relics a physical presence in the museum, we decided to use markers which visually represented the shape of the monuments (Figure 1). These markers simultaneously worked as Artcodes (Preston et al. 2017) that could be scanned with a smartphone, triggering a digital interaction (Figure 2). Thus, the Artcode markers served as an added layer in tension with the exhibited collection. The intention was that this tension would work as a trigger for curiosity and critical reflection.

The markers were placed inside the existing exhibition at the museum such that they were not always easy to spot, and sometimes even hidden intentionally (Figure 3). The app provided clues on how to find each marker. The purpose was both to introduce a playful activity of searching for the markers inside the museum space, and to let the placement of the markers reflect that many of the monuments are in remote locations, and hidden from public consciousness. Each marker served as an entry point to one of the existing monuments as well as to a specific theme relating to their history. While these themes were not explicitly communicated in the physical exhibition, there did exist connections between the objects on display and the virtual content of the app. In this way, the monuments both communicated with and intervened with the current exhibition. The app included eight such themes: 1) Monuments and meaning, 2) Style and ideology, 3) War, death and victims, 4) Controversy and contested heritage, 5) Tourism and play, 6) Abandonment and destruction, 7) History and the generational gap, 8) The future.

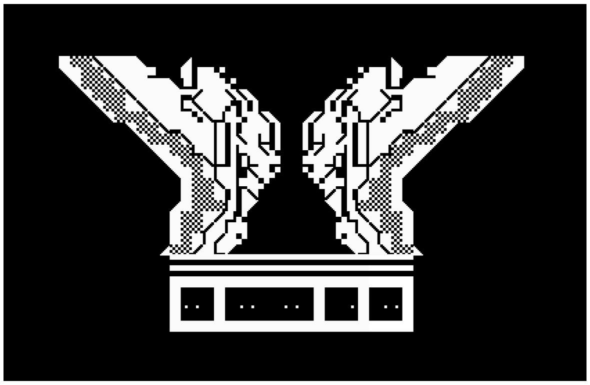


Figure 1: Visual marker of the monument in Tjentište.

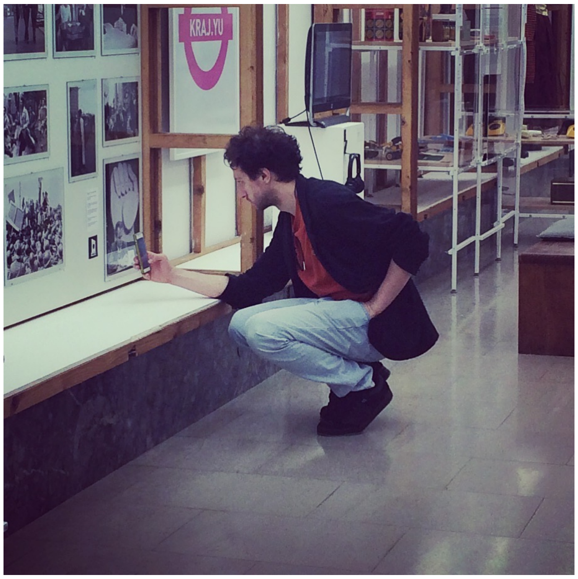


Figure 2: A test user scanning one of the 'Spomenik' Artcodes.

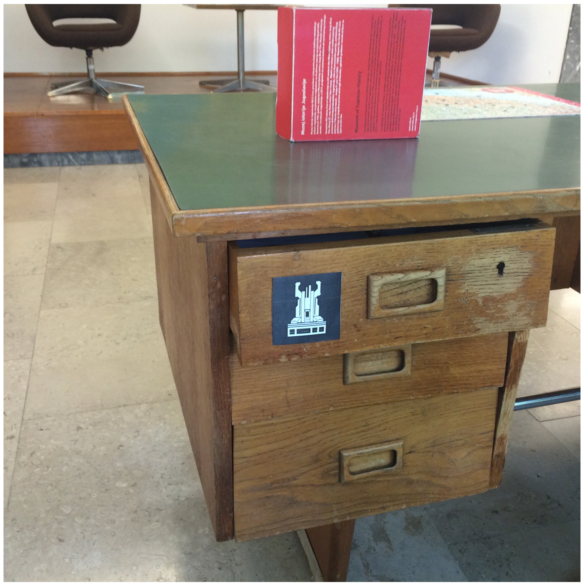
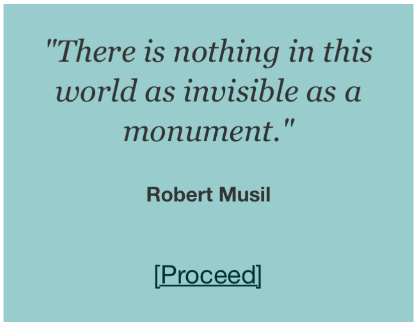


Figure 3: An Artcode placed at the back of a desk.

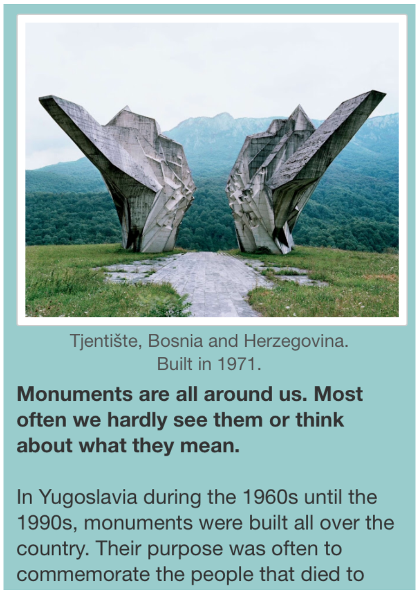


"There is nothing in this world as invisible as a monument."

Robert Musil

[Proceed]

Figure 4: Quote introducing the theme *Monuments and meaning*.

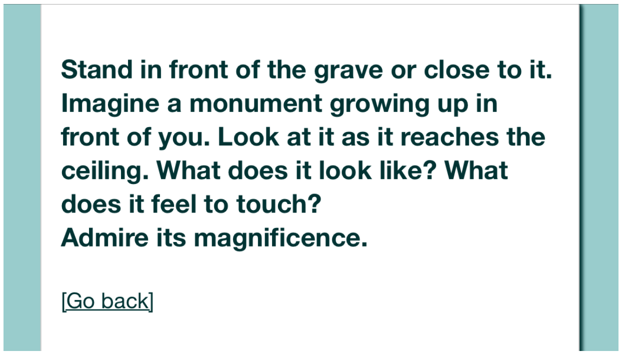


Tjentište, Bosnia and Herzegovina.
Built in 1971.

Monuments are all around us. Most often we hardly see them or think about what they mean.

In Yugoslavia during the 1960s until the 1990s, monuments were built all over the country. Their purpose was often to commemorate the people that died to

Figure 5: Presentation of the theme *Monuments and meaning.*



Stand in front of the grave or close to it. Imagine a monument growing up in front of you. Look at it as it reaches the ceiling. What does it look like? What does it feel to touch?
Admire its magnificence.

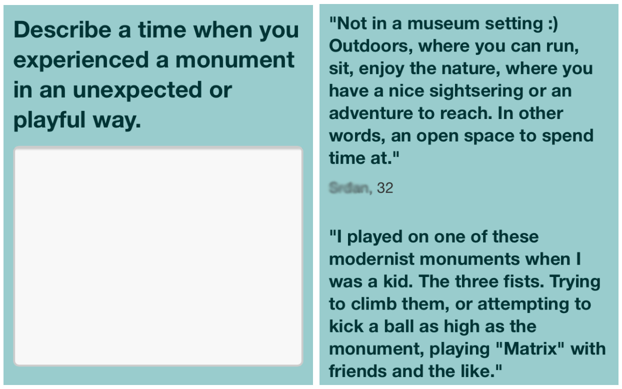
[Go back]

Figure 6: "Challenge card" from the theme *Monuments and meaning.*

After scanning a marker, the user first encountered a quote related to the theme (Figure 4). Then the user was presented with an image of the monument and a short theme text (Figure 5). At this point the user could choose to get more detailed information about the monument, take on a playful challenge or proceed to answer a question. For each marker scanned, the app would add the corresponding monument to the user's collection. After scanning all eight monuments the user would receive a reward in form of a digital map of the geographical locations of the monuments.

Building on Witcomb's (2013) ideas on affective curatorial strategies which encourages critical engagement with a historical topic, we presented the users with a series of poetic provocations. Our goal with these parts of the design was to invite a playful mindset which could trigger visitors' imagination, build attentiveness, evoke emotions as well as facilitate reflection. The provocations were presented as playful challenges on the backside of a 'challenge card' inside the app (Figure 6). They would prompt participants to put themselves in a specific state of mind, using their imagination and their bodies to interact with the museum environment. These challenges ranged from being light-hearted and playful to more emotionally challenging.

Furthermore, for each theme the participants were presented with a question which they could answer inside the app (Figure 7). The purpose was to provoke reflections on the different topics addressed, and to link the experience at the museum with personal life outside of it. After submitting an answer, it was possible to view answers from other participants.



Describe a time when you experienced a monument in an unexpected or playful way.

"Not in a museum setting :) Outdoors, where you can run, sit, enjoy the nature, where you have a nice sightsering or an adventure to reach. In other words, an open space to spend time at."

[redacted], 32

"I played on one of these modernist monuments when I was a kid. The three fists. Trying to climb them, or attempting to kick a ball as high as the monument, playing "Matrix" with friends and the like."

Figure 7: Question and answers related to the theme *Tourism and play.*

Evaluation

The students viewed interacting with the app in the museum as a very personal experience. They interpreted the challenge cards and questions as a way to make a personal and emotional connection with the historical content. One of the interviewees described the experience as an "historical/emotional roller-coaster". In this way, the experience became 'bigger'– not just about learning history, but to some degree also about connecting with challenging aspects of life such as death, conflict and forgiveness. Using play and imagination were also seen as a way to "communicate with the space" and putting the participant in an "active role", as well as challenging them to think for themselves. They saw the questions in the app both as ways to reflect and contribute, but also as concrete reminders that people have diverse perspectives on objects.

According to the students, the app gave them a new perspective on the objects on display. A sense of discovery, and a feeling of novelty were reported, but they also pointed out that their attentions where drawn away from the physical exhibition. Moreover, they expressed some disapproval towards putting too much focus on their mobile phones. Furthermore, interacting with the app forced them to slow down significantly. This was described both as a positive quality – because it gave space for deeper reflection – but also as a frustration. Feelings of not having enough time or being stressed about answering the questions were expressed. As one of them put it: "It is also nice how the game made me slow down and concentrate on something that is connected to the museum but not physically present. On the other hand, the game requires a lot of time to play".

The critique from the group of experts was to a large extent consistent with that expressed by the students. The withdrawal of attention from the exhibited objects was again pointed out. The same ambiguous experience of having to slow down and take one´s time – being both frustrating and valuable – was reported. Although the group remarked positively upon the combination of themes, challenges, and questions, one of the participants reported a strong negative reaction to one of the more emotional challenges about forgiveness. This reaction made the person concerned disconnect from the rest of the experience: "After that I didn't care all that much about the challenges anymore, especially the ones that had me do something".

The last part of the evaluation was a qualitative analysis of all the answers that the participants submitted to the questions in the app. Altogether there are 105 answers to the 8 different questions. Reading the answers with a particular focus on their emotional tenor, we find many answers which indicate emotional reactions to the themes in the app. For instance, responding to the question "What monuments are missing in the world today?" we find answers like:

- "Monuments to love and responsibility to other people"
- "We need more dancing, music fountains"
- "Ones that represent joy and achievement and not only commemorate misery and disaster"

Many answers do not directly express emotions, but rather indicate a philosophical, political or aesthetic attitude. Consider these answers to the question "How should we treat the memories of the most horrible things in our past":

- "Remember them. Oblivion is second death"
- "By dialogue, by exposing the stories connected to that memory, by visualizing the horrible things in objects such as monuments"
- "With gratitude for the gained knowledge"

Finally, a few answers were more humorous or ambiguous, such as the following answers to the question "If these monuments were antennas to outer space, what message would you send to anyone listening?":

- "Don't come here. Humans are fucking headcases. Put a quarantine around the planet saying: "danger! Leave well alone!""

- "Who ordered the veal cutlet?"

In sum, the answers to the questions affirms the findings from the interviews, indicating that the design experiment succeeded in facilitating reflection and emotional engagement among the participants, although a distancing irony or ambiguity were also expressed. However, it is important to take into account that being students of Art History as well as researchers, designers and museum professionals, the participants showed a great respect for the museum as an institution, something which is very likely to affect the outcome of the test sessions.

Implications for design

The main takeaway from our experiment is that by using poetic provocations in the form of questions and playful challenges, it is possible to facilitate reflections and emotional responses that help visitors connect more deeply with an exhibition. A foundation can in this way be set for critical engagement and meaningful user contributions, not least when it comes to dealing with contested exhibitions. However, there are difficulties to consider. We encountered two main challenges. Firstly, the participants expected the digital experience to be closely connected with the physical objects on display. The idea of intervening in or interrupting an exhibition would need to be more clearly communicated in order to be accepted. Secondly, when using affective strategies, it requires visitors to commit to the intellectual and emotional labour involved. According to Witcomb, "visitors require a sense of curiosity, a willingness to engage with a certain opaqueness or to accept that meaning is not reduced to information or instantly available" (Witcomb 2013, 267). This resembles what Csikszentmihalyi (1975, 10) terms an autotelic activity, something which "require formal and extensive energy output on part of the actor, yet provide few if any conventional rewards." As we know from visitor studies, people going to a museum have very different motivations and learning styles (Falk and Dierking 2012). They also have different relationships to experiencing and expressing emotions. Thus, pace, duration, and depth need to be carefully calibrated when designing a possibly unsettling experience, especially when considering that not all museum visitors are students of Art History nor researchers, designers or museum professionals.

We suggest that in order to learn how to better design for critical engagement through affect, one could build on Benford and Giannachi's concept of trajectories (2011). Working with affect trajectories – a way to describe the inner journeys participants take through an experience – could be a useful tool in order to come to a deeper understanding of how participants react to unsettling or emotionally challenging experiences. This would help to identify points of transitions and traversals between different emotions or states of mind during a specific experience. Similar to Benford and Giannachi's distinction between canonical and participant trajectories, affect trajectories would need to distinguish between the designer's intentions and the actual emotional journeys experienced by the participants, which could be mapped using data from interviews, self-tracking and written comments. We hope to explore this possibility in further research.

Acknowledgements

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727040 (the GIFT project). We would like to give a special thank you to Bogdan Spanjevic, the company NextGame, as well as Museum of Yugoslavia for all the help and collaboration. The Artcodes for the monuments were designed by Raquel Meyers who generously assisted in the development of the prototype.

References

Ahva, Laura, and Mikko Hautakangas. 2017. "Understanding 'constructive' through Action Research." Conference presentation presented at the Nordmedia 2017: Mediated Realities - Global Challenges, Tampere, Finland, August 17.

Beale, Katy. 2011. *Museums At Play – Games, Interaction and Learning*. Edinburgh: MuseumsEtc.

Benford, Steve, and Gabriella Giannachi. 2011. *Performing Mixed Reality*. The MIT Press.

Benford, Steve, Gabriella Giannachi, Boriana Koleva, and Tom Rodden. 2009. "From Interaction to Trajectories: Designing Coherent Journeys Through User Experiences." In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 709–718. CHI '09. New York, NY, USA: ACM. https://doi.org/10.1145/1518701.1518812.

Bevan, Mark T. 2014. "A Method of Phenomenological Interviewing." *Qualitative Health Research* 24 (1):136–144. https://doi.org/10.1177/1049732313519710.

Birchall, Christopher, and Stephen Coleman. 2015. "Creating Spaces for Online Deliberation." In *Handbook of Digital Politics*, edited by Stephen Coleman and Deen Freelon, 264–80. Northampton, MA: Edward Elgar Publishing. http://dx.doi.org/10.4337/9781782548768.00025.

boyd, danah. 2012. "The Politics Of 'real Names.'" *Communications of the ACM* 55 (8):29. https://doi.org/10.1145/2240236.2240247.

Cameron, Duncan F. 1971. "The Museum, a Temple or the Forum." *Curator: The Museum Journal* 14 (1):11–24. https://doi.org/10.1111/j.2151-6952.1971.tb00416.x.

Canter, Lily. 2013. "The Misconception of Online Comment Threads." *Journalism Practice* 7 (5):604–19. https://doi.org/10.1080/17512786.2012.740172.

Coe, Kevin, Kate Kenski, and Stephen A. Rains. 2014. "Online and Uncivil? Patterns and Determinants of Incivility in Newspaper Website Comments." *Journal of Communication* 64 (4):658–79. https://doi.org/10.1111/jcom.12104.

Coleman, E. Gabriella. 2012. "Phreaks, Hackers, and Trolls: The Politics of Transgression and Spectacle." In *The Social Media Reader*, edited by Michael Mandiberg, 99–119. New York: New York University Press.

Crockett, M. J. 2017. “Moral Outrage in the Digital Age.” *Nature Human Behaviour*, September, 1. https://doi.org/10.1038/s41562-017-0213-3.

Csikszentmihalyi, Mihaly. 1975. *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*. San Francisco, CA: Jossey-Bass.

Damala, Areti. 2006. “A Taxonomy for the Evaluation of Mobile Museum Guides.” In *Proceedings of the 8th Conference on Human-Computer Interaction with Mobile Devices and Services, Mobile HCI 2006, Helsinki, Finland, September 12-15, 2006*. https://doi.org/10.1145/1152215.1152283.

Dunne, Anthony. 2006. *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design*. Cambridge, MA: MIT Press.

Dunne, Anthony, and Fiona Raby. 2001. *Design Noir: The Secret Life of Electronic Object*. Basel, Switzerland: Birkhauser.

Elgesem, Dag, and Thomas Vie Nordeide. 2016. “Anonymity and Tendentiousness in Online Newspaper Debates.” In *Journalism Re-Examined: Digital Challenges and Professional Reorientations. Lessons from Northern Europe*, edited by Martin Eide, Helle Sjøvaag, and Leif Ove Larsen. Bristol: Intellect Books.

Erjavec, K., and M. P. Kovacic. 2012. “‘You Don’t Understand, This Is a New War!’ Analysis of Hate Speech in News Web Sites’ Comments.” *Mass Communication and Society* 15 (6):899–920. https://doi.org/10.1080/15205436.2011.619679.

Etkind, Alexander. 2004. “Hard and Soft in Cultural Memory: Political Mourning in Russia and Germany.” *Grey Room* (July):36–59. https://doi.org/10.1162/1526381041887439.

Falk, John H., and Lynn Diane Dierking. 2012. *The Museum Experience Revisited*. London, England: Routledge.

Finley, Klint. 2015. “A Brief History of the End of the Comments.” *WIRED*, October 8, 2015. https://www.wired.com/2015/10/brief-history-of-the-demise-of-the-comments-timeline/.

Flanagan, Mary. 2009. *Critical Play: Radical Game Design*. Cambridge, MA: The MIT Press.

Gaver, William W., John Bowers, Andrew Boucher, Hans Gellerson, Sarah Pennington, Albrecht Schmidt, Anthony Steed, Nicholas Villars, and Brendan Walker. 2004. “The Drift Table: Designing for Ludic Engagement.” In *CHI ’04 Extended Abstracts on Human Factors in Computing Systems*, 885–900. CHI EA ’04. New York, NY, USA: ACM. https://doi.org/10.1145/985921.985947.

Jackson, Philip W. 1998. *John Dewey and the Lessons of Art*. New Haven, CT: Yale University Press.

Kahr-Højland, Anne. 2010. “EGO-TRAP: A Mobile Augmented Reality Tool for Science Learning in a Semi-Formal Setting.” *Curator: The Museum Journal* 53 (4):501–9. https://doi.org/10.1111/j.2151-6952.2010.00050.x.

Karp, Ivan, Corinne A. Kratz, Lynn Szwaja, and Tomas Ybarra-Frausto, eds. 2006. *Museum Frictions: Public Cultures/Global Transformations*. Duke University Press.

Kempenaers, Jan. 2010. *Spomenik*. Roma Publications.

Kies, R. 2010. *Promises and Limits of Web-Deliberation*. New York: Palgrave.

Kraut, Robert E, Paul Resnick, Sara Kiesler, Moira Burke, Yan Chen, Niki Kittur, Joseph Konstan, Yuqing Ren, and John Riedl. 2011. *Building Successful Online Communities: Evidence-Based Social Design*. Cambridge, MA: The MIT Press.

LaBarre, Suzanne. 2013. “Why We’re Shutting Off Our Comments.” *Popular Science*, September 24, 2013. http://www.popsci.com/science/article/2013-09/why-were-shutting-our-comments.

Løvlie, Anders Sundnes, Karoline Andrea Ihlebæk, and Anders Olof Larsson. 2017. “User Experiences with Editorial Control in Online Newspaper Comment Fields.” *Journalism Practice* 0 (0):1–20. https://doi.org/10.1080/17512786.2017.1293490.

McGonigal, Jane Evelyn. 2010. *Reality Is Broken: Why Games Make Us Better and How They Can Change the World*. Penguin Press HC, The.

Mees, Annette. 2011. “Art Heist, 2010: An Interactive Adventure by Coney.” In *Museums at Play: Games, Interaction and Learning*, edited by Katy Beale, 84–95. Edinburgh: MuseumsEtc.

Muddiman, Ashley, and Natalie Jomini Stroud. 2017. “News Values, Cognitive Biases, and Partisan Incivility in Comment Sections.” *Journal of Communication* 67 (4):586–609. https://doi.org/10.1111/jcom.12312.

Parry, Ross. 2010. *Museums in a Digital Age*. London & New York: Routledge.

Potkonjak, Sanja, and Tomislav Pletenac. 2007. “City and Ideology: ‘Cultures of Oblivion’ on the Example of the Town of Sisak.” *Studia ethnologica Croatica* 19 (1):171–97.

Preston, William, Steve Benford, Emily-Clare Thorn, Boriana Koleva, Stefan Rennick-Egglestone, Richard Mortier, Anthony Quinn, John Stell, and Michael Worboys. 2017. “Enabling Hand-Crafted Visual Markers at Scale.” In *Proceedings of the 2017 Conference on Designing Interactive Systems*, 1227–1237. DIS ’17. New York, NY, USA: ACM. https://doi.org/10.1145/3064663.3064746.

Putnik, Vladana. 2016. “Second World War Monuments in Yugoslavia as Witnesses of the Past and the Future.” *Journal of Tourism and Cultural Change* 14 (3):206–21. https://doi.org/10.1080/14766825.2016.1169344.

Roedl, David J., and Erik Stolterman. 2013. “Design Research at CHI and Its Applicability to Design Practice.” In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1951–1954. CHI ’13. New York, NY, USA: ACM. https://doi.org/10.1145/2470654.2466257.

Røtne, Olav, and Victor Kaptelinin. 2013. “Design Choices and Museum Experience: A Design-Based Study of a Mobile Museum App.” In *Proceedings of the 6th Latin American Conference on Human Computer Interaction - Volume 8278*, 9–13. CLIHC 2013. New York, NY, USA: Springer-Verlag New York, Inc. https://doi.org/10.1007/978-3-319-03068-5_3.

Rowe, Ian. 2015. “Civility 2.0: A Comparative Analysis of Incivility in Online Political Discussion.” *Information, Communication & Society* 18 (2):121–38. https://doi.org/10.1080/1369118X.2014.940365.

Rubino, Irene, Jetmir Xhembulla, Andrea Martina, Andrea Bottino, and Giovanni Malnati. 2013. “MusA: Using Indoor Positioning and Navigation to Enhance Cultural Experiences in a Museum.” *Sensors (Basel, Switzerland)* 13 (12):17445–71. https://doi.org/10.3390/s131217445.

Ruiz, C., D. Domingo, J. L. Mico, J. Diaz-Noci, K. Meso, and P. Masip. 2011. “Public Sphere 2.0? The Democratic Qualities of Citizen Debates in Online Newspapers.” *International Journal of Press-Politics* 16 (4):463–87. https://doi.org/10.1177/1940161211415849.

Sanderhoff, Merete, ed. 2014. *Sharing Is Caring: Openness and Sharing in the Cultural Heritage Sector*. Copenhagen: National Gallery of Denmark. http://www.sharingiscaring.smk.dk/om-museet/smk-udgivelser/sharing-is-caring-antologien/laes-sharing-is-caring/.

Santana, Arthur D. 2014. “Virtuous or Vitriolic.” *Journalism Practice* 8 (1):18–33. https://doi.org/10.1080/17512786.2013.813194.

Simon, Nina. 2010. *The Participatory Museum*. Santa Cruz, California: Museum 2.0. http://www.participatorymuseum.org/.

Sobieraj, Sarah, and Jeffrey M. Berry. 2011. “From Incivility to Outrage: Political Discourse in Blogs, Talk Radio, and Cable News.” *Political Communication* 28 (1):19–41. https://doi.org/10.1080/10584609.2010.542360.

“Strategic Plan 2014-2018 Museum of Yugoslav History.” 2014.

Sunstein, Cass R. 2017. *#Republic: Divided Democracy in the Age of Social Media*. Princeton and Oxford: Princeton University Press. http://press.princeton.edu/titles/10935.html.

Surtees, Joshua. 2013. “Spomeniks: The Second World War Memorials That Look like Alien Art.” Newspaper. The Guardian. June 8, 2013. https://www.theguardian.com/artanddesign/photography-blog/2013/jun/18/spomeniks-war-monuments-former-yugoslavia-photography.

Witcomb, Andrea. 2013. “Understanding the Role of Affect in Producing a Critical Pedagogy for History Museums.” *Museum Management and Curatorship* 28 (3):255–71. https://doi.org/10.1080/09647775.2013.807998.

Wright, Scott, and John Street. 2007. “Democracy, Deliberation and Design: The Case of Online Discussion Forums.” *New Media & Society* 9 (5):849–69.

Zimmerman, John, Jodi Forlizzi, and Shelley Evenson. 2007. “Research Through Design As a Method for Interaction Design Research in HCI.” In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 493–502. CHI ’07. New York, NY, USA: ACM. https://doi.org/10.1145/1240624.1240704.

Paper 2:

Playing Games with Tito: Designing Hybrid Museum Experiences for Critical Play.

Løvlie, A. S., Ryding, K., Spence, J., Rajkowska, P., Waern, A., Wray, T., Benford, S., Preston, W. & Clare-Thorn, E.

In Press:
Accepted for publication in ACM Journal on Computing and Cultural Heritage (JOCCH).

Playing games with Tito: Designing hybrid museum experiences for critical play

ANDERS SUNDNES LØVLIE, Center for Computer Games Research, IT University of Copenhagen
KARIN RYDING, Center for Computer Games Research, IT University of Copenhagen
JOCELYN SPENCE, Mixed Reality Lab, University of Nottingham
PAULINA RAJKOWSKA, Department of Informatics and Media, Uppsala University
ANNIKA WAERN, Department of Informatics and Media, Uppsala University
TIM WRAY, Center for Computer Games Research, IT University of Copenhagen
STEVE BENFORD, Mixed Reality Lab, University of Nottingham
WILLIAM PRESTON, Mixed Reality Lab, University of Nottingham
EMILY CLARE-THORN, Mixed Reality Lab, University of Nottingham

This article brings together two distinct, but related perspectives on playful museum experiences: Critical play and hybrid design. The article explores the challenges involved in combining these two perspectives, through the design of two hybrid museum experiences that aimed to facilitate critical play with/in the collections of the Museum of Yugoslavia and the highly contested heritage they represent. Based on reflections from the design process as well as feedback from test users we describe a series of challenges: Challenging the norms of visitor behaviour, challenging the role of the artefact, and challenging the curatorial authority. In conclusion we outline some possible design strategies to address these challenges.

CCS Concepts: • **Human-centered computing** → *Empirical studies in HCI*.

Additional Key Words and Phrases: Experience design, critical play, hybrid experiences, contested heritage

ACM Reference Format:
Anders Sundnes Løvlie, Paulina Rajkowska, Karin Ryding, Annika Waern, Tim Wray, Steve Benford, William Preston, Jocelyn Spence, and Emily Clare-Thorn. 2019. Playing games with Tito: Designing hybrid museum experiences for critical play. *ACM J. Comput. Cult. Herit.* 1, 1 (September 2019), 26 pages. https://doi.org/10.1145/1122445.1122456

1 INTRODUCTION

There is a growing interest in play and games in museums, causing the museum scholar Jenny Kidd to declare a "ludic turn within museums" [67]. Games have been created for museums for a range of different purposes, such as increasing visitor engagement [4, 29], learning [7, 78, 92], or community building [56]. However, bearing in

---

Authors' addresses: Anders Sundnes Løvlie, asun@itu.dk, Center for Computer Games Research, IT University of Copenhagen, Rued Langgaards Vej 7 , København, 2300, Denmark; Paulina Rajkowska, Department of Informatics and Media, Uppsala University, Box 513, Uppsala, 751 20, Sweden; Karin Ryding, Center for Computer Games Research, IT University of Copenhagen, Rued Langgaards Vej 7 , København, 2300, Denmark; Annika Waern, Department of Informatics and Media, Uppsala University, Box 513, Uppsala, 751 20, Sweden; Tim Wray, Center for Computer Games Research, IT University of Copenhagen, Rued Langgaards Vej 7 , København, 2300, Denmark; Steve Benford, Mixed Reality Lab, University of Nottingham; William Preston, Mixed Reality Lab, University of Nottingham; Jocelyn Spence, Mixed Reality Lab, University of Nottingham; Emily Clare-Thorn, Mixed Reality Lab, University of Nottingham.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

© 2019 Association for Computing Machinery.
XXXX-XXXX/2019/9-ART $15.00
https://doi.org/10.1145/1122445.1122456

mind the educational role of museums, the turn towards playfulness may also raise concern: Can museums at the same time facilitate play and critical thinking? Kidd suggests that playful and immersive heritage encounters "can be a way of asking difficult questions and offering provocations on the very nature of museum-making" [67].

This is part of the vision of critical play: play which purposely challenges dominant worldviews and systems of power [45]. Considering the concerns of new museology [124] and critical museology [107], which combine an interest in participation and interactivity with a critical stance towards established systems of thought, critical play is a highly relevant perspective to explore for the design of playful museum experiences.

The variety of technologies used for museum experiences is ever increasing. Much research in Human-Computer Interaction (HCI) has explored the design of interactive technologies for museums, both considering standalone installations, smartphone-based experiences and various types of assemblages of devices [59]. The perspective of 'hybrid design' [14] focuses on designing experiences that merge the physical visit with digital content in new ways. Hybrid design has been used to enable participation [30, 35], and in various ways provoke and challenge the visitor in order to invite reflection [11, 28, 46, 58]. Smartphone technology makes it possible to create pervasive games [87]: Games that challenge the spatial, temporal and social limits for play. Thus, smartphone-based games are a particularly promising technology for critical play in the museum context, as they make it possible to use the museum as a hybrid physical/virtual playground, challenging not just the limits of play but also the norms and expectations of the museum as an institution.

Such endeavours are not free of obstacles, not least due to the complexity of combining new designs and technological formats with the critical stance. In this paper we report on our experiences developing and testing two hybrid museum experiences 'in the wild', [19, 33]. A museum, a game design company and a research team collaborated to prototype two hybrid museum experiences. The museum in question, the Museum of Yugoslavia, was chosen as a particularly challenging environment, being home to a collection of artefacts related to Josip Broz Tito, the ruler of a country that no longer exists in a region that has seen many decades of political and often violent struggle. The two games that we report on were designed to bring in perspectives and reflections on the museum that were not strongly represented in the exhibition. As such, they enabled very different experiences compared to merely visiting the physical exhibition. While the games were designed and tested in collaboration with museum staff, we will show how the opportunities presented by hybrid technology also became challenges, from precisely this perspective. We will explore the following research question: *What challenges may arise when designing hybrid museum experiences for critical play?*

2 RELATED WORK

2.1 New and Critical Museology

In Peter Vergo's introduction to the edited collection The New Museology, the author complains that "what is wrong with the 'old' museology is that it is too much about museum *methods*, and too little about the purposes of museums" [125, p. 3, emphasis in the original]. Vergo's interdisciplinary, multivocal, and multifaceted approach to a "new museology" emphasises the importance of values; societal assumptions, norms, and contexts; and stresses the importance of turning the one-way delivery of supposedly neutral information into a dialogue among the many stakeholders whose values, contexts, and stories have often been overlooked.

Today, the term "critical museology" [107] is often preferred. This perspective shares most if not all of these concerns. Anthony Shelton describes critical museology as divorced from the "operational museology", the "methods" so well-rehearsed to Vergo's ears, and concerned instead with increased accessibility, the representation of multiple groups, decolonisation, and the sharing of curatorial authority with visitors and the general public [107]. As part of this general turn towards a "new" or "critical" museology in the past 20 to 30 years, a central question emerged about the role of the *object* in the museum – formerly unquestionably their primary focus – and the *idea* (which may include not only the curator's opinion, but bringing together of a plurality of perspectives) [130, 133].

In response, museum institutions have increasingly shifted their focus from highlighting physical collections to highlighting stories and experiences they can share with their audiences [57]. This can include a higher emphasis on stimulating the senses; David Howes for example argues for a “sensory museology” in which visitors can interact with museums using all five basic senses, possibly facilitated by digital technologies [60]. Examples of this “sensory museology” include Andermann and Simine’s [6] work on memory-based museums and their focus on evoking emotions in their visitors. Both story-based approaches and sensory approaches share a fundamentally participatory ambition, in which the visitor is envisioned as possessing agency and scope for some form of interaction [112]. This is especially interesting when the curated work in question is itself interactive (see e.g. [51]). Some of the more wide-ranging practical implications of “new” or “critical” museologies have been studied within the museum literature, such as how a museum’s curatorial intent shapes visitor experience [122], how people move through cultural heritage spaces in relation to other visitors [126], and the ethical concerns that arise when visitors engage with a museum by creating their own digital content [68].

2.2 Digital Interactions in Museum Experiences

The introduction of digital technology has proven to be relevant in addressing the concerns of these recent approaches to museology for a range of different reasons: some digital technologies can encourage participation and a sense of contribution, increase accessibility of certain collections to certain audiences who previously had no means of experiencing the museum or its objects for themselves, and strengthen the notion that the idea the object raises in the community is at least as worthy of engagement as the object itself.

In HCI and interaction design, leading researchers Eva Hornecker and Luigina Ciolfi describe how museums have long been a "fertile research ground for Human-Computer Interaction research" [59, p. xv]. Some research has explored approaches to soliciting participation from museum professionals [11, 27, 101], but most have focused on visitor experiences. Interpersonal and social matters highlight the contextualised nature of museum visits, notably how families orient themselves to digital devices and respond to crowded points of interest [100], how groups of visitors manage a coherent experience [121], and how visitors choose what to photograph for posting on social media [55]. However, we see little effort within HCI to address broad, societal questions raised by museums showing work of a highly contested nature, except perhaps where "dissenters" such as Holocaust deniers would be roundly condemned by the wider population within which their museums are situated (e.g. [75]).

Early technological interventions often extended the interactivity of the traditional audio guide. However, the introduction of digital guide applications for visitors led to concern among some museum professionals, who worried that the technology would steal too much of the visitors’ attention away from the museum exhibits. As early as 1996, Walter lamented the consequences of introducing "electronic guides": "Visitors became absorbed in their electronic guides, interacting less with their companions and less with the objects on display" [129, p. 241]. In subsequent years, similar concerns have often resurfaced, frequently referred to as “the heads-down phenomenon” [61, 73, 94, 131]. In recent years, some research has focused on the use of technology to facilitate group interactions in museums, helping users in their attentional "balancing act" [135] between focusing on their phones and their surroundings [44, 46, 66].

2.2.1 *Hybrid Experiences.*

We see promise in the area of HCI research of "mixed reality" or "hybrid" design, as discussed many years ago [14] and expanded upon in the context of mixed reality [17]. These researchers take advantage of the many affordances of digital technologies, particularly virtual and/or augmented reality, but design the experience in combination with the user’s embodied presence in the particular physical space and social context of their surroundings. The literature includes notable examples of installation-based hybrid experiences in museums, from objects that beg passing visitors to be put on display [81] to replica objects that guide visitors through the museum according to the perspective of their choice [80] and objects situated on a context-aware backdrop that allow visitors to tell their own stories about them on augmented reality-enabled tablets [37].

Increasingly, visitors' own smart devices are being leveraged in mixed-reality design processes that actively seek to maximise a "heads-up" approach. Although there are still some significant socio-economic as well as simple preference-based barriers to full uptake [95], digital interventions that take place on visitors' own personal devices allow those visitors to co-create their own experiences using familiar tools from their own everyday lives [28, 77]. One simple but striking example is an app that lets selected paintings overlay their style onto images of the everyday world outside or extend themselves into their virtual surroundings [63]. Another used Artcodes [84], a QR-style code that can be designed in any artistic style, in one case to create unique interactive experiences for many hundreds of visitors to the Tate gallery in London [98], and in another to link drawings visitors placed next to museum objects automatically to unique webpages holding their own spoken stories about those objects [5]. Another, which used photos and private audio messages between friends, allowed users to "gift" each other objects from the museum that they felt their receiver would like, often leading to a notable change in their behaviours and attitudes towards the museum experience [114]. We sought to explore a similarly simple, private, smartphone-based experience, primarily because it would allow for the private expression of what might socially be perceived as unwelcome or even forbidden reactions to the strongly contested histories in our partner museum.

2.2.2 Frictional Hybrid Experiences. While most work on hybrid experience design focuses on the challenges related to creating as integrated experiences as possible [18], there is also a strand of interaction design research that has investigated ways in which the physical and digital aspects of an experience need not always be fully aligned. In early work on seamful design [25, 26], Chalmers et al. argued that it may not always be beneficial to hide the inner workings of the digital infrastructure from users. Rostami et al [103] explored how performance artists will sometimes combine VR and real-world experiences in ways that capitalize on, rather than hide, the friction between the physical and the digital. Work on experience trajectory design places particular emphasis on how to design transitions between different media [7] to be visible and actionable, but also engaging. In the context of museum experiences, Fosh et al [47] suggested an approach to overlaying digital experience on sculptures in which visitors followed a five-stage journey through each exhibit – approach, engage, experience, disengage and reflect – with the official interpretation only being revealed during the reflect stage. These examples show that it is critical to understand how the digital and physical are connected in hybrid experiences, and that a fully integrated experience is not always possible or the best solution.

2.3 Games and play in museums

There is a growing interest in games and play in museums [15, 67]. The idea to use play in museums is influenced by several different developments. One is the proliferation of learning theories that emphasize that children play to learn [36, 52, 88]. Another development is the work towards opening up museums for co-creation and participation [112], which goes hand in hand with the process of digitalization and digitisation [93] enabling new applications of play in museums.

Over the years, a large number of serious games have been developed for museums, from simple web-based games to larger Virtual Reality productions[7]. Mobile or pervasive museum games often tend to fall under the category of the scavenger hunt, where players follow clues and solve puzzles [10]. A popular example is The Murder at the Met Scavenger Hunt at the Metropolitan Museum of Art in New York [69]. Experiments have also been done with role-playing games [91], storytelling games [123], as well as games fostering different variations of playful and open-ended interactions with museum artefacts [31, 128]. The British artist group Blast Theory has explored the intersection of art and pervasive games in a variety of museum and heritage settings through works such as Ghostwriter [120] and Fixing Point [119].

However, the introduction of games into a museum environment is not without its challenges. Bergström et al. [20] discuss the challenges of using gamification to facilitate informal learning, while preventing the game from distracting from the learning. Wakkary and Hatala [128] equally point out that it is important that the playfulness induced by the design is not perceived to be separate from the museum environment to the point where it is distracting or does not make sense for the players. However, as we saw from the examples of so-called "frictional hybrid experiences", there are situations where is makes sense to use play deliberately to create tensions and induce a critical awareness, rather than to align it completely with the physical environment. One conceptualization of such play is what we would like to present next, namely *critical play*.

2.4 Critical Play

Critical play is a form of play in which norms and conventions are deliberately being challenged. Games scholar Mary Flanagan [45] has forwarded it as a broad concept which encompasses a wide range of play activities from artistic play practices – such as techniques used by the Surrealists – to engagement in modern videogames designed for political, aesthetic, and social critique.

The study of critical play can roughly be divided into three parts: Firstly, the study of *transgressive play*, which is concerned with play against the ‘ideal’ or ‘implied’ player of a game, of bending rules and playing a game in ways not anticipated by design [3, 65, 117]. When it is done deliberately as part of a critical political agenda, Dyer-Witheford and de Peuter name this activity “counterplay” [43]. Secondly, we have the study of *critical games*, which are games that pose an alternative to mainstream games [22, 48, 72]. Examples of these games include *Phone Story* [86] and other games by Molleindustria [85], as well as work by Anna Anthropy [8], along with other games belonging to queer games studies [104]. Lastly, and most relevant for our study, is the study of *brink play* [97], also named *boundary play* [89]. The critical potential in this form of play, lies in its power to let players explore personal, social, and cultural boundaries protected by the mindset and the social contract of "this is just a game".

Traditionally, play is seen as an activity which takes place separately from the ’real’ world. Renowned play scholar and historian Johan Huizinga describes play as creating "temporary worlds within the ordinary world, dedicated to the performance of an act apart" [62, p. 10]. These worlds "within which special rules obtain"(ibid), are sometimes referred to as "the magic circle of play" [115]. According to games scholar Cindy Poremba, by pushing or breaching the bounds of the magic circle, brink games not only force the awareness of explicit and implicit game rules, but of implicit and explicit non-game rules as well [97]. This includes social norms and cultural conventions of the environment in which the play is situated. In this capacity, critical play gives players the opportunity to examine the cultural regimes in which they live [118] and allows them to engage in small acts of deviance [53].

Transgressing norms in a playful way is central to comedy [34] and to expressions of the carnivalesque [12, 13] but can equally be done in a more introspective and intimate manner [105, 106]. Therefore, games that are designed to foster brink or boundary play employ a number of different approaches that range from the humorous and satirical, to the poetic and the more openly confrontational. This can be seen in the work by artists and designers such as Joseph DeLappe [38], Cory Arcangel [9] and Brody Condon [32] among others, as well as in numerous work from the Nordic Larp scene [116].

An example of a game which specifically explores critical play in a museum setting, is Art Heist. This is an interactive narrative piece that was developed at The New Art Gallery Walsall in October 2010. In this role-playing game the participants plan and carry out an art theft at the gallery: “Art Heist uses the transgressive qualities of art theft and the excitement of breaking into a gallery while posing its audience big questions about art: who is it for, who decides what’s good, why is it valuable and does the value of the art lie in the idea or in the object?” [83].

Art Heist, in its rather radical use of theft as a metaphor, points to how *appropriation* is a crucial part of art practice as well as play [53, 108]. Interestingly, in a cultural heritage context, the term "appropriation" typically refers to borrowing or even stealing another culture's artefacts and histories without permission, a deeply problematic challenge in the era of post-colonialism [137]. In HCI, on the other hand, appropriation is a term with positive connotations, referring to how users may come to appropriate technologies for their own purposes during the course of practice [24, 39, 40]. In Art Heist, participants needed to make their own decisions and actively use the space of the museum for their own objectives, something which is a typical characteristics for play [54]. In this sense, critical play opens up for new ways to interact with museums and their content, ways that can prove to be ethically challenging as historical contexts and artistic intentions are running the risk of being ignored. On the other hand, critical play can potentially be a powerful way for visitors to engage with contested heritage by fostering an active questioning of historical discourse as well as traditional museum conventions.

Another notable example of particular relevance to the prototypes presented in this article, is the "Bad News Game" [102], which invites players to take on the role of a fake news creator in order to learn about the techniques used in fake news. The creators of the game describe this as an "inoculation" strategy, positing that "preemptively exposing, warning, and familiarising people with the strategies used in the production of fake news helps confer cognitive immunity when exposed to real misinformation" [102, p. 1]. Brenda Brathwaite's game *Train* explores the phenomenon of complicity by tasking players with loading toy people onto train cars, only later to reveal that these trains are headed for Auschwitz [23]. In a similar (albeit less extreme) vein, the game *Papers, please* by Lucas Pope [96] puts players in the role of border bureaucrats in a fictional Eastern European country, in what Sicart calls "an exploration of totalitarian bureaucratic systems and the banality of evil" [109, p. 151].

2.5 Contested heritage

This article focuses on the challenge of facilitating critical play with an extraordinary example of contested heritage: the The Museum of Yugoslavia, which is dominated by the objects, stories, and mausoleum of its controversial leader, Josep Broz Tito. Tito ruled Yugoslavia from 1953 until his death in 1980. He personally led the forces that defeated the Nazi invasion of his homeland. Yet he used guerilla tactics that could today see him condemned as a "terrorist". As a Communist, he aligned Yugoslavia with the Soviet Bloc, but alone amongst the Soviet satellite rulers, he allowed some freedom of movement and adopted some Western economic practices. Yet (again) he exerted his powers through a "cult of personality" culminating in a "Presidency for Life", leaving little room for dissent. After his death, the country was ill-equipped to chart a peaceful course, culminating in the Bosnian War of 1992-1995. Domestically and internationally, Tito still polarises opinions. Some see him as a heroic force for good, while others see him as a brutal megalomaniac.

Within heritage studies, much work has explored the challenges with preserving and exhibiting "difficult heritage" [41, 64, 76]. Viewed from the perspective of discourse theory, the concept of heritage itself may be considered as a contest among hegemonic discourses [113]. Silverman discusses the consequences of "socially engaged, politically aware study of the past that regards heritage as contested (and) recognizes the role of power in the construction of history (...)" [111]. Silverman sees cultural heritage as full of conflict and power struggles between different communities of practice, and as an ongoing process in which history is not just accounted for but also created as a political project. Studies of contested heritage have focused on studying the sites in which there are multiple actors involved and the material objects themselves can be of controversial character. In that sense contested heritage can relate to topics such as post-colonial ownership of artefacts [21, 99], deciding what is and is not valuable to preserve [110], and how to treat cultural heritage in light of tourism and increased public interest [70].

Galaty [49] looks at how different stakeholders in sites of conflict, such as the Balkans, hold multiple interpretations of their cultural heritage and how important it is to make space for expression of those multiple points of view. Andrea Witcomb [134] argues for the use of affective strategies to enable a form of historical consciousness that leads to a critical engagement with "difficult" topics such as histories of war and oppression. She promotes sensorial, embodied museum experiences that may trigger emotional responses, rather than exhibitions that use explicitly rational, information-based content on linear display. She underlines how the poetic production of unsettling experiences requires visitors to engage both intellectually *and* emotionally, potentially leading to deeper and more meaningful experiences for the visitors.

3 METHOD

Our approach has been one of ‘Research Through Design’ [138], in which research findings emerge from design practice. We worked in a practice-led manner through the design, prototyping and review of two contrasting visiting experiences as a way of engaging with the changing face of the modern museum and the role that hybrid technologies might play in reshaping the visiting experience. These designs were developed in the form of smartphone apps: *Twitto* and *Monuments for a Departed Future* - both of which were designed for and tested at the Museum of Yugoslavia.

Our design team included a professional game design company as well as academic researchers with design, human-computer interaction (HCI) and museology backgrounds. We worked in situ so that physical elements of the interventions were visible to regular users. However, because these were pilot studies regarding an extremely sensitive and contested history, they were not released to the general public. Even so, we consider them to be inspired by the aims of research "in the wild" [19, 33] to the extent that we worked with a museum that would help us engage with its current challenges of contemporary museum interpretation. We worked in its space and with its staff and visitors over the course of a year to inform, test and challenge our designs.

The two designs that we present are suggested not as finalised design solutions, but rather as experimental prototypes used to critically probe the issues of critical play in a complex and challenging setting. In describing the prototypes, we present both the design challenges that we wrestled with as a team and the feedback that we gathered from curators and visitors. Due to the sensitive nature of the heritage within which we were working, we tested our prototypes on invited participants, all of whom could provide expert insight from the perspectives of museum professionals, designers, and students. Therefore, while we present some of their feedback and insights gained from it, we do not intend this as a substitute for evaluation by members of the general public.

Participants were interviewed after the test sessions, following a semi-structured interview guide. Interviews were audio recorded, transcribed and analysed by members of the research team to identify themes for the analysis. In some of the tests researchers were also observing the participants, and insights from these observations are included in the analysis where relevant.

The designs presented here formed part of a larger, cross-disciplinary research project funded by Horizon 2020, exploring hybrid museum experiences, called the GIFT project (gifting.digital). The project included extensive collaboration between researchers from three universities, museum professionals from a wide range of European museums, as well as two design companies. In order to anchor the research and design in the concrete needs of museums, the project set up an action research process with 10 museums in Europe and the US. Each of the two design companies partnered with one of the participating museums to develop experimental prototypes intended to explore innovative formats for hybrid museum experiences. The first of these sub-projects focused on the concept of hybrid gifts, and resulted in the *Gift* app developed by the UK company Blast Theory, presented in [114]. The second sub-project, led by the Serbian design agency NextGame – which resulted in the *Twitto* prototype discussed in this article – focused on "playful appropriation". This concept was explored in parallel by one of the authors - Karin Ryding - as part of her PhD research, resulting in the *Monuments for a Departed Future* prototype.

4 THE MUSEUM OF YUGOSLAVIA

The Museum of Yugoslavia, situated in the Serbian capital of Belgrade, has more than 100,000 visitors a year and is the most visited museum in Serbia. The museum is located on the grounds of the former communist leader Josip Broz Tito's palace, and houses the grave of Tito and his wife. From our initial visits at the museum, an impression emerged that the dominating presence of Tito's legacy presented a challenge for the museum curators (see "Contested Heritage" above) in developing the more critical perspective they aim to present. As stated in the museum's strategy documents:

> Principles, values, interpretation and even heritage itself are changeable categories which are created in relation to the contemporary context — ideology, politics, the economy and scientific models. Because of this, we encourage CRITICAL THINKING and presentation of diverse views of the same events, documents or data. [1, (caps in the original)]

The museum representatives in the project have expressed a desire for the museum to reinvent itself as a modern institution that explores how digital technologies may help enable a more participatory and dialogue-based visitor experience. The tensions of such a vivid and recent history of contested heritage presented us with rich opportunities for using hybrid experiences to tell alternative stories and present alternative experiences.

5 TWITTO

If the Yugoslavian communist leader Tito had Twitter, how would he have used it? Would he have been as sophisticated using social media as he was in the propaganda techniques of his own time? This is the playful premise of *Twitto*, a game that invites visitors to put themselves in the shoes of an autocratic dictator and learn about propaganda through building their very own cult of personality. Exploring the historical exhibitions of the Museum of Yugoslavia, visitors are invited to create their own manifestos, posters, autobiographies and other items of propaganda for whichever cause they choose to make their own – be it "Death to capitalism", "girl power" or "pineapple on pizzas". In the following we will present the design of this game, through the design process and rationale, the final prototype and the evaluation.

5.1 Design process and rationale

It is characteristic of the design process of *Twitto*, as for the rest of the GIFT project, that the process involved a broad cross-disciplinary team of designers, developers and university researchers, but also involving extensive collaboration with museum representatives. The design team initiated the process by inviting the university researchers and representatives of the museum to a workshop, in order to explore the museum's needs and the opportunities and challenges posed by the project. In the following 3 months, the company worked iteratively in collaboration with some of the university researchers to develop a first prototype, which was tested twice with museum representatives - first as a paper prototype, later as a fully functional app in a workshop at the museum on 28-29 June 2017. Experiences from this test led to a complete redesign of the concept, leading to a new prototype that was tested with a group of invited test participants on 22 February 2018.

From the start of the process, the museum representatives made it clear that they were not interested in bringing in play or technology just to attract new visitor groups. Rather, their motivation was to find ways for visitors to engage more deeply with the museum, seemingly reflecting the "forum" ideal of new museology, in which the museum should see its mission as facilitating dialogue and debate. In the first workshop one of the museum representatives put it as follows:

> more people is not basic goal. Definitely not. It's to get those values that we don't have right now. Maybe you will hear stories that you don't know right now. Maybe you see perspectives you didn't see until this point. (...) We are trying to unlock one more perspective, one more meaning, what this object means to another person. This is how we see technology as a tool.

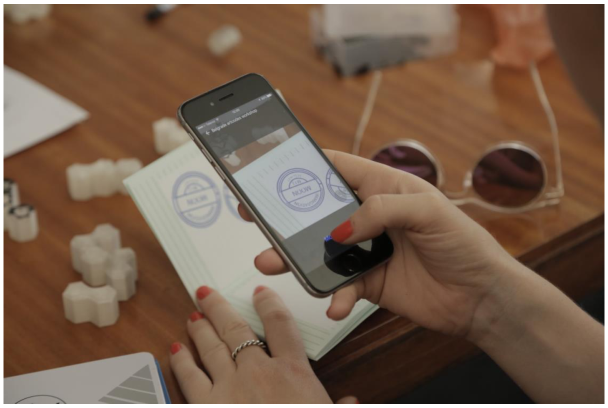


Fig. 1. Scanning a passport stamp in the first version of *Twitto*.

Throughout the design process, three questions in particular stood out. First, how would the digital experience be linked to the physical exhibits, *technically*? Second, how would the digital interaction (the game) be connected with the physical exhibits, *conceptually*? Third, how would the game facilitate play - and in particular, *critical play*?

Regarding the first question, the design team decided early on to use the Artcodes platform [84] as a prototyping tool, as this supports the design of scannable markers that can be shaped flexibly to match the desired aesthetic, and can be redefined dynamically to allow visitors to reshape the interactions enabled by the marker. The team experimented with a number of different ways to integrate the Artcode markers into the experience, as explained below.

This work happened in close connection with the second question, about the conceptual connection. Initially, the team focused on one prominent feature of the museum: Its large collection of rare and valuable objects given to Tito as gifts from foreign leaders and diplomats, exhibited alongside (and often overshadowing) the museum's presentation of key moments in Yugoslavian history, through the two World Wars, a communist dictatorship and finally the country's disintegration in civil war. This inspired the first prototype, which used physical (but fake) passports and ink based stamps as the central technique and metaphor. During the cold war, Yugoslavian passports were known for being among the few passports of the world that would allow free travel both in the east and the west. In the exhibition, a number of passport stamps were placed next to gifts from leaders of respective country – e.g. a passport stamp representing the USA next to a gift from the US president, etc. Before entering the exhibition, visitors were handed a physical (fake) passport, and instructed that the goal of the game was to try to find as many physical stamps in the exhibit as possible and use them to stamp their passport (see Figure 1). The stamps produced marks that were Artcodes, which could then be scanned using the game app, leading the visitor to a historical photograph and a short text that presented a short exchange between Tito and the foreign leader. In presenting these exchanges, the designers were attempting to explore Tito's skilled use of propaganda and relate it to contemporary political rhetoric. Thus, the narrative was based on the idea that if Tito had been alive today, he would probably have been a skilled user of social media such as Twitter - hence the name of the app, Twitto. Each scenario ended with a prompt, inviting the visitor to put themselves in the role of Tito, tweeting about this incident – what would Tito tweet?

This prototype was tested in the workshop 28-29 June 2017, by participating researchers as well as museum representatives. While all participants were enthusiastic about the use of passports as both conceptual and technical link between the physical and digital, it turned out to be problematic in practice as the stamps often

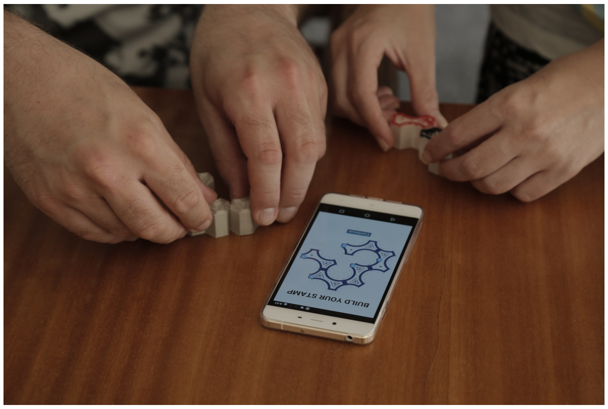


Fig. 2. Assembling an Artcode stamp out of small building blocks.

would not be precise enough to be scanned by the app. Another technique was tested out at the same workshop, consisting of small "building blocks" that could be assembled by a visitor to create their own unique Artcode stamp (see Figure 2). These could be used to leave a stamp on blank posters hung in the exhibition – and visitors could then post a digital message using the Artcode app, that other visitors would see when scanning their stamp. However, this format also turned out to be difficult to use in practice. Museum representatives made it clear that it would be impossible for them to allow visitors to use ink stamps in the exhibition, due to the risk to the precious objects on display. Furthermore, the team wished to facilitate a deeper critical engagement with the historical content of the exhibition.

Based on these experiences, a new prototype was designed and implemented. In this version, the technical linking between physical exhibits and digital content was simplified: instead of using stamps, the design team created stickers that could be placed next to exhibits relevant to the game and scanned to trigger interactions (see Figure 3). Furthermore, the new prototype included a stronger focus on Tito's use of propaganda, in particular his "cult of personality". The app presented Tito's history, from early childhood through his days as a rebel leader to his long rule as communist statesman, through a series of "chapters". The app would teach visitors about Tito's propaganda tactics and then challenge them to put themselves in the role of an authoritarian leader constructing their own propaganda messages.

5.2 Twitto: Final prototype

Below, we briefly describe the prototype as tested in February 2018. Twitto can be described as a single-player role-playing game, in which the player is cast in the role of a resistance leader and eventually dictator. Going through the museum, the player may scan stickers with Artcodes posted next to artefacts of particular significance in the story (or myth) of Tito (see Figure 3). The Artcodes were designed to resemble insignia on partisan uniforms from Tito's rebel army during World War II. Scanning a sticker would open a new 'chapter' in the game, starting with a few short sentences presenting one period of time in Tito's life and the significance of the scanned artefact (Figure 4). After this the player is prompted to put themselves in Tito's shoes, e.g.: If you were a political resistance leader, what would your party be called? What would your propaganda poster look like? For each "chapter" in Tito's biography, the player is tasked with answering a series of prompts as in Figure 5. The input is fitted into a predesigned template, resulting in the player assembling a propaganda item – a poster, party manifesto, book cover, etc. Thus, the game offered a series of creative challenges to the player, framed to fit into a propaganda format that was intended to facilitate both light-hearted play as well as critical reflection on the nature of propaganda both in the history of communist-era Yugoslavia and today.

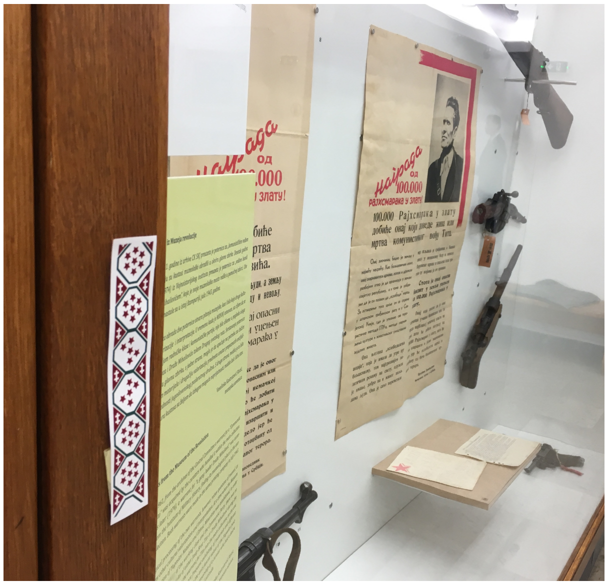


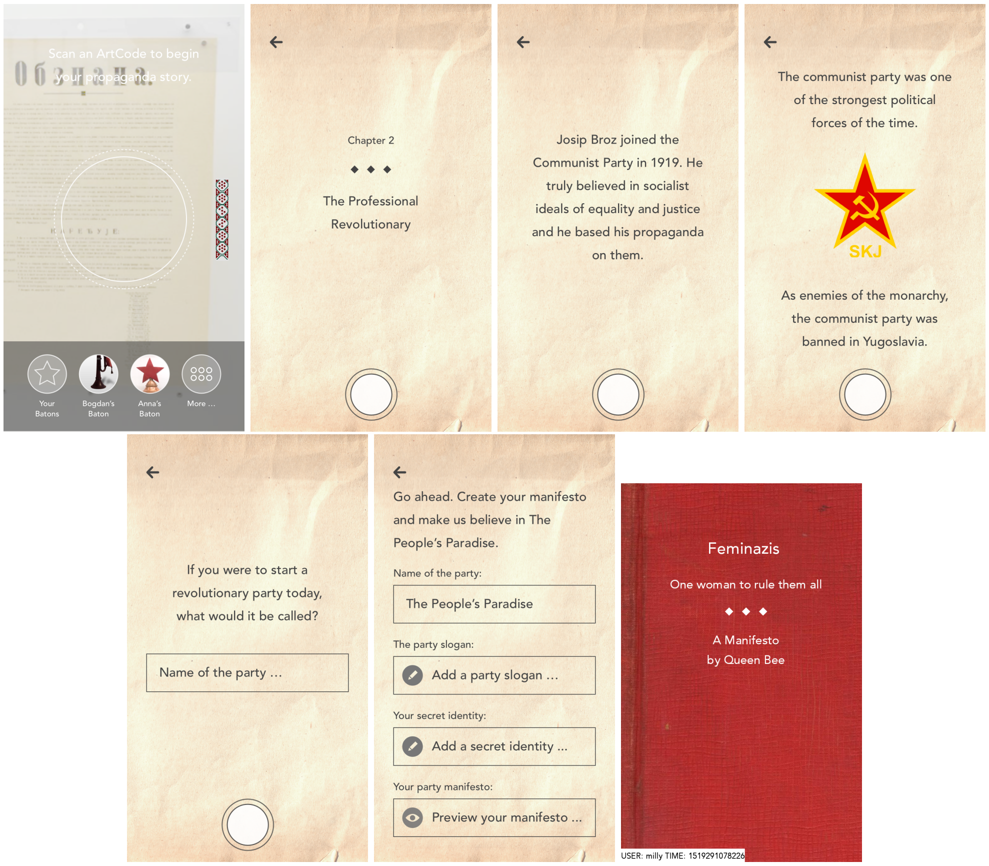
Fig. 3. Artcode from Twitto posted next to a famous "Wanted" poster from WWII, relating to Tito's time as partisan leader fighting the Nazi occupation.

5.3 Evaluation

In order to test the feasibility and acceptability of this prototype, Twitto was tested by a small group of 24 participants at the museum on 22 February 2018. Due to the nature of the prototype – dealing with sensitive topics, and being perceived as potentially challenging to the museum – we recruited test participants with relevant backgrounds from the networks of the design company and the museum representatives, and consisted mainly of students and professionals from the museum and design sector. Among the test participants 16 were female, 8 male. The test participants were invited to explore the exhibition on their own, using the app on test devices they borrowed from the researchers. After the test, the participants were debriefed in group interviews with researchers.

Twitto received much positive feedback from participants in the playtest, being described as 'fun', 'creative', 'really cool', 'really funny', 'inviting', 'imaginative', and 'an unexpected experience'. Looking into the co-created content, we see that participants responded to the challenge of making propaganda for themselves by connecting to their personal lives at varying levels of seriousness. Some adopted a playful tone, others aimed for a more serious approach. For instance, when asked to give a title to a fictive manifesto, participants suggested titles like: 'Revolutionary Cats: Cats are life', 'Gluten: Free gluten to everyone' and 'Justice: Death to capitalism'.

Given the historic tensions and still simmering conflicts in several parts of the former Yugoslavia, the design team was concerned about causing offence when inviting visitors to the museum – and Tito's grave – to engage in playful behavior that could include transgressions such as mockery and incivility. At the same time, the designers were equally worried about adopting an uncritically laudatory tone and therefore adopt the version of Tito's history that had been used in propaganda. To our surprise, introducing playfulness to the exhibit did not cause



Scan an ArtCode to begin your propaganda story.

Chapter 2

◆ ◆ ◆

The Professional Revolutionary

Josip Broz joined the Communist Party in 1919. He truly believed in socialist ideals of equality and justice and he based his propaganda on them.

The communist party was one of the strongest political forces of the time.

As enemies of the monarchy, the communist party was banned in Yugoslavia.

If you were to start a revolutionary party today, what would it be called?

Name of the party ...

Go ahead. Create your manifesto and make us believe in The People's Paradise.

Name of the party: The People's Paradise

The party slogan: Add a party slogan ...

Your secret identity: Add a secret identity ...

Your party manifesto: Preview your manifesto ...

Feminazis

One woman to rule them all

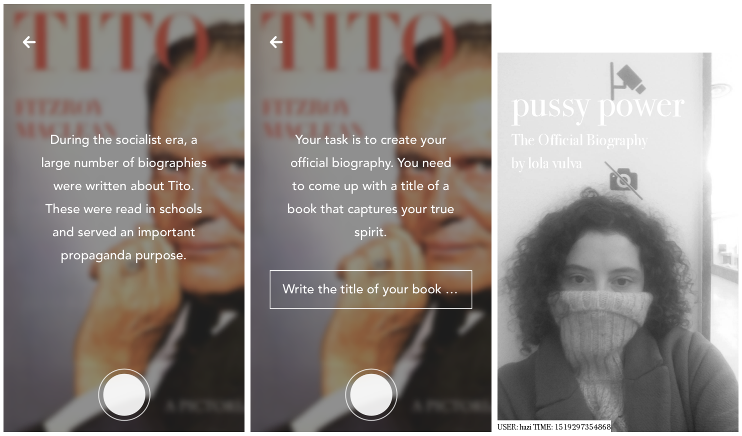
◆ ◆ ◆

A Manifesto by Queen Bee

USER: milly TIME: 1519291078226

Fig. 4. Screenshot from the Twitto app. When an Artcode is scanned, the app opens a series of screens that present a "chapter" in Tito's life, and prompt the player to create their own propaganda item – in this case, a manifesto. The last image is a manifesto created by one of the test players.

offence; it was received with enthusiasm and gave plenty of food for thought in the follow up discussions with our test participants. However, in spite of these positive comments, the overall reception among the participants was negative. The main argument raised against the app was that it seemed to direct the players' attention away from the artefacts on display. "It was fun, it was inviting, but I expected it to be more connected to the objects in the exhibition", one test participant said, and another: "I have some kind of expectation at some points I'll be looking at the exhibition, but my focus was only caught on the phone". Secondly, many participants also found the experience too trivial, lacking in deeper reflection and learning. Furthermore, several participants felt unsure about the "tone" of the app: 'I was confused and I didn't know if it was meant to be serious or not.' Some of those who tried to use the app to express earnest, serious messages were worried that this might make them look silly: 'my slogan was "stand for new humanity", and "I fight against mass-manipulation", and those kinds of things. Sort of for me, like I look silly, [but] it was serious for me'. One participant suggested that the app should make it clear to users that joking is acceptable, by including an explicit instruction in the beginning to 'remember to have fun.'



During the socialist era, a large number of biographies were written about Tito. These were read in schools and served an important propaganda purpose.

Your task is to create your official biography. You need to come up with a title of a book that captures your true spirit.

TITO
Write the title of your book ...
pussy power
The Official Biography
by lola vulva
USER: hazi TIME: 1519297354868

Fig. 5. A challenge from the Twitto app, together with the response from one of the participants.

6 MONUMENTS FOR A DEPARTED FUTURE

Where Twitto was designed to be a humorous play on the narrative of the museum and closely connected to its objects, Monuments for a Departed Future (or Monuments for short) was designed as a playfully poetic and intimate experience, which focused on objects that were not, and could not be, on display in the museum. The selected objects were the 'Spomeniks': socialist monuments placed all over the former Yugoslavia which are not represented in the permanent exhibition. Just as with Tito himself, the monuments are focal points for ideological battles and offer rich possibilities for contrasting interpretations. This, in combination with their distinct aesthetic style, made them ideal as a critical point of entry to the history of Yugoslavia.

Monuments was designed by one of the participating researchers during a period from March to June 2017. The design built on Witcomb's [134] ideas on how to present visitors with "poetic provocations" in order to encourage critical engagement with "difficult" historical topics. The design goal was not only to provide an alternative historical narrative to the one provided by the museum; it was also to disrupt the ways in which visitors related to the museum and its existing content. Therefore, during the design process, it became important to develop ways in which the design could foster both a playful and an introspective mindset in its users. The aim was to trigger visitors' imagination, build attentiveness, evoke emotions, as well as facilitate reflection.

In the final version of the game, Artcode markers graphically similar to the real monuments were used in order to give them a physical anchor point in the museum. These were placed inside the existing exhibition (Figure 4). The game provided clues on how to find each marker, inviting a playful activity of searching for the markers inside the museum and to let the hidden placement of the markers mirror how many of the monuments are located in remote locations, hidden from public consciousness. Each marker served as an entry point to one of the existing monuments as well as to a specific theme relating to their history (Figure 5). The app included eight such themes that were identified in collaboration with museum curators. After scanning a marker, the user was presented with an image of the monument and a short text on the theme. At this point the user could choose to get more historical facts about the monument, take on a challenge or answer a question. The challenges would prompt the participant to put themselves in a specific state of mind, using their imagination and their body to interact with the museum environment (Figure 6). While some of the challenges were light-hearted and playful, others more emotionally challenging. The questions were deliberately formulated to provoke reflection on contested heritage and the cultural significance of monuments. Together with the challenges, they also served to connect the experience at the museum with the user's personal life outside of it. After submitting an answer to a question, users could view answers from other participants.

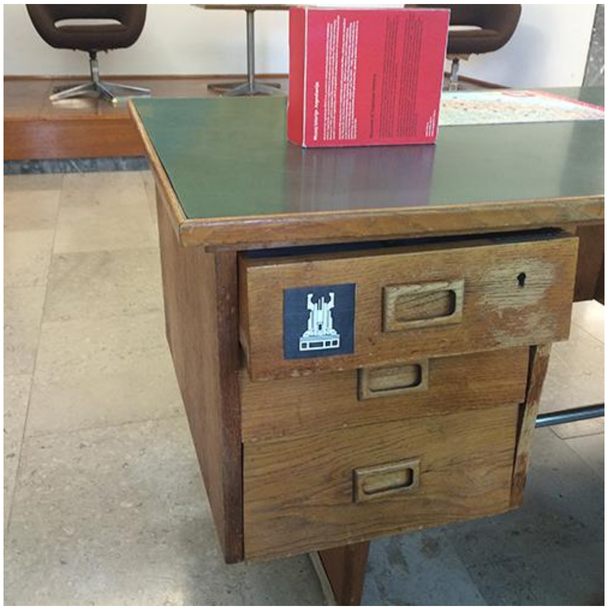


Fig. 6. An Artcode representing a monument, placed at the back of a desk.

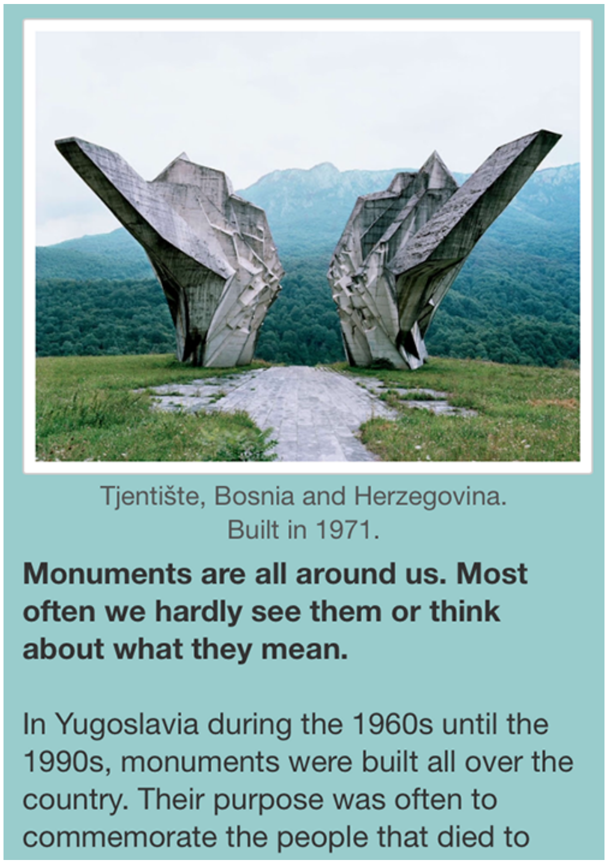
6.1 Evaluation

Monuments for a Departed Future was implemented and trialled at the museum in June 2017; first by four art history students from the University of Belgrade (two female and two male in their early 20s) and a week later by an expert panel of nine participants (four female, five male) from the museum and the research project. The collected data from the trials is based on observations, individual interviews and a group discussion with the expert panel (for details, see [authors]).

The overall reception of Monuments was largely positive, being described as 'spiritual', 'powerful', and having a 'thoughtful resonance'. Differently from Twitto, in Monuments players tended to take a more serious stance and be more emotionally engaged with the content. One of the participants described it as a 'historical/emotional roller-coaster', because of how it connected historical topics with personal life outside the museum. Another participant described it as: 'waking you up in a way'. However, having a playful approach to sometimes very intimate and personal topics was off-putting to one participants: "One of the things that threw me off was the challenge about personal conflict and forgiveness, since I felt it was making light of that topic and I didn't like it." On the other hand, the same challenge was perceived as appropriate by another participant: 'especially this part with the forgiveness. For me it was really deep and maybe most powerful'.

The co-created content - the answers that the participants submitted to the questions in the app - also contrasts with that of Twitto, as the answers tended mostly to reveal earnest reflections on the app's theme. For instance, responding to the question "What monuments are missing in the world today?" we find answers such as:

- "Monuments to love and responsibility to other people."
- "We need more dancing, music fountains."

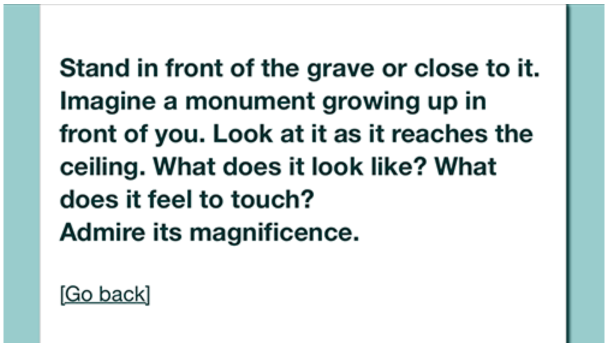


Tjentište, Bosnia and Herzegovina.
Built in 1971.

Monuments are all around us. Most often we hardly see them or think about what they mean.

In Yugoslavia during the 1960s until the 1990s, monuments were built all over the country. Their purpose was often to commemorate the people that died to

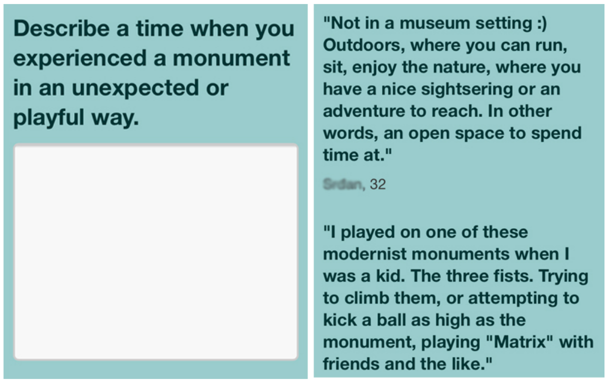
Fig. 7. Screenshot from Monuments, with info snippet about one of the monuments.



**Stand in front of the grave or close to it. Imagine a monument growing up in front of you. Look at it as it reaches the ceiling. What does it look like? What does it feel to touch?
Admire its magnificence.**

Fig. 8. A poetic provocation from the Monuments app.

- “Ones that represent joy and achievement and not only commemorate misery and disaster.”



Describe a time when you experienced a monument in an unexpected or playful way.

"Not in a museum setting :) Outdoors, where you can run, sit, enjoy the nature, where you have a nice sightsering or an adventure to reach. In other words, an open space to spend time at."

[redacted], 32

"I played on one of these modernist monuments when I was a kid. The three fists. Trying to climb them, or attempting to kick a ball as high as the monument, playing "Matrix" with friends and the like."

Fig. 9. Question and answers from the Monuments app.

However, also in Monuments some of the answers were more humorous or ambiguous, such as the following answers to the question “If these monuments were antennas to outer space, what message would you send to anyone listening?”:

- “Don’t come here. Humans are fucking headcases. Put a quarantine around the planet saying: ‘danger! Leave well alone!’”
- “Who ordered the veal cutlet?”

Test players of Monuments also commented that the experience tended to direct their attention away from the physical artefacts on display, leading them rather to focus on their mobile devices. However, this reaction was much less pronounced and widespread than in the case of Twitto.

7 DISCUSSION: CHALLENGES FOR CRITICAL PLAY IN THE MUSEUM

The two experiences presented in this article complement each other in at least two ways, relating to the concepts of critical play and hybrid museum experiences: First, they offered quite different invitations to play – one being quite irreverent and satirical, the other being more intimate and poetic. Second, the designs related to the physical collections in different manners: One used physical artefacts on display in the museum as starting points for playful challenges, while the other focused on artefacts that were not present in the museum, attempting to give them a virtual/hybrid presence.

As noted above, the invitation to play in the Museum of Yugoslavia was challenging for both visitors as well as the museum curators. Even though both games aimed to tread a careful balance between the playful, the critical, and the historical narratives, several tensions came to the surface as they were trialled at the museum. Here we discuss issues emerging out of a) using mobile technology to foster play in the museum (as opposed to stationary interactive installations), b) the different approaches taken by the two games in terms of connecting with the exhibited artefacts and fostering critical awareness.

7.1 Challenging norms of behaviour

First of all, inviting visitors to play a pervasive game in the museum may easily challenge some of the visitor’s expectations about norms for moving and behaving in a museum. While many museum professionals are eager to see museum spaces as open and available to a wide range of activities - including games and play - visitors come to museums with a set of norms and expectations, and may not always feel certain about which kinds of playful behaviour is acceptable. This is echoed in the study referred to earlier by Wakkary and Hatala [128], in which they found that even though playfulness was identified positively in all aspects of their interface, the overall satisfaction was split between those participants who enjoyed playing and those who did not.

During the play tests of Monuments and Twitto, participants could be seen looking at their phones, posing for playful selfies, searching for monument codes or sitting down in deep thought. In post-experience interviews from both games it became clear that participants were unsure whether this kind of behaviour was acceptable in the museum. Some instructions were seen as more challenging than others, as in this example from Monuments:

> One of the challenges required you to close your eyes. The sitting down is all right, and it does engage you to actually go through space and do something you would not actually do. (...) But the eye-closing one… I did it but not really sincerely. (...) Just the thought of it, looking weird to onlookers was off-putting.

A practical challenge also emerged when it came to fitting the hybrid experience within the time-frame of a museum visit. Some of the participants saw Monuments as a deep, contemplative experience that required a slower tempo than the one in which they would usually go through a museum. As such, they would have liked to have more time to explore the content more in depth: "I was trying to achieve it as fast as I can (...) but I would actually like to add more space to sit around just diving into what am I reading. Maybe reflecting a bit more". When it came to Twitto, several participants pointed out that the app experience left the visitor with little time to take in the exhibition. Some expressed this as feeling a bit guilty for missing out on the museum:

> I felt the pressure from the game to go faster to scan the other stuff and see what's going on and I didn't take the time to look at all the stuff that I would otherwise (...) this way it was just okay, let's just scan the next thing and finish it.

Both the guilt and feelings of awkwardness expressed by the participants point to how the introduction of play in a museum,particularly when the area for play is not spatially contained or temporally limited, may serve as a disruption to the very idea of what a museum visit is. Within museology museums are sometimes referred to as ritual environments [16, 42]. According to Carol Duncan, museums guide and give cues to visitors on how to perform and how to respond to the exhibits [42]. Even though people continually "misread", scramble or resist cues on how to behave, most of us tend to act in a similar manner. This is confirmed by ethnographic observations [127] as well as in quantitative studies [136]. One of the characteristics of critical play, as described earlier in the article, is the transgression of norms. This is part of the transformative potential of critical play, however it is also what makes it particularly challenging to participate in for certain individuals in certain contexts.

In order to increase the number of visitors who will feel safe enough to play, social contracts need to be properly established; both between players and other visitors, as well as between players and the museum. This is always challenging when it comes to hybrid experiences, such as pervasive games, where the digital content acts as a hidden layer only accessible to those engaged in it. However, it shows how important it is both to communicate to visitors beforehand what they can expect from the experience, as well as to provide players with the possibility to opt-out at any moment.

7.2 Challenging the role of the artefact

As described earlier, one of the central challenges in the design process of Twitto was establishing an adequate connection between the physical artefacts and the digital experience. Both museum representatives and visitors expressed a desire to avoid letting the digital device take too much of the user's attention and divert their attention away from the physical exhibition, reflecting the common concern about the "heads-down phenomenon" described above (see section 2.2).

The design team explored multiple ways to connect the physical exhibition to digital experiences technically, narratively and through the design of visitor challenges. In Twitto, each challenge in the game took a specific object in the exhibition as its starting point, and connected the object and its significance explicitly to the topic of the challenge. For instance, scanning the Artcode next to a historic poster (see Figure 3) would take the player to a short series of screens explaining the significance of that particular poster, before presenting the player with the challenge to create their own propaganda poster. Still, the disconnect between physical artefacts and digital experience became a main point of criticism. It was voiced both by those participants who stated they liked the experience overall as well as by those who didn't. The opinion was also shared among those who worked in museums and those who did not. A possible explanation may be that the great emphasis on playful co-creation quickly led the participants' attention away from the artefacts, instead getting caught up in the challenge of coming up with playful responses. Once the participant had scanned the Artcode, there was nothing in the app directing their attention back towards the physical artefact.

An alternative approach towards reorienting visitor focus towards artefacts is to design visitor tasks that emphasize the artefacts and the museum collection through the way the visitor is asked to engage with them, both narratively and through visual and bodily orientation. One of the challenges in Twitto used this approach to connect the digital with the objects on display. This challenge was associated with the part of the exhibition that dealt with Tito's role as a resistance leader during World War II. On display is the 'Wanted' poster that can be seen in Figure 3, which was put up by the German forces in 1943, offering a large sum of money as a reward to anyone who gave them information leading to the capture of Tito. An Artcode placed next to this poster triggered a chapter briefly presenting Tito's role as a resistance leader, and then tasked players with creating 'Wanted' posters for themselves. They were asked to look around the physical exhibition and take a picture of a valuable object they would offer as a reward for their capture. Since the majority of the artefacts on display in this part of the museum are objects given to Tito as diplomatic gifts, the challenge was well aligned with the theme of the exhibition and there was a rich selection of items for participants to choose from. Several trial participants mentioned this challenge in particular as triggering creative ideas and experiences, in searching the exhibition for precious objects they could offer as a reward for their own capture.

In Monuments, the graphically significant Artcodes were placed on or near objects in the museum, and sometimes the playful challenges related specifically to nearby artefacts, such as Tito's grave (see Figure 6). However, for the most part the game did not address displayed artefacts, nor did it present information related to the objects in the vicinity, dealing instead with the (distant) 'Spomeniks'. Hence, Monuments was deliberately designed to introduce a certain disconnect between physical artefacts and the digital experience in order to give presence to objects that were not in the museum. This created an experience that was, to a large degree, detached from the physical reality of the museum, turning it instead into as a stage for an ambiguous play with time and space. However, perhaps surprisingly, this did not cause the same negative reaction from test players regarding the connection to artefacts. Rather, most of the test participants were intrigued:

> it's taking you somewhere else. It is taking you to the past. It is taking you to the locations where these monuments are, which are all outdoors and then you are indoors. So, you try to imagine it a bit. It's a play of spaces, which we are surrounded with.

Another test player, who was already quite familiar with the museum, stated that the app made them see the museum with new eyes:

> It's like I am here for the first time. It is completely changing your perspective. You really feel like you never have been here, and actually the things you're seeing now you see with completely other eyes.

The difference between Twitto and Monuments regarding the participants' comments about the connection to artefacts is perhaps puzzling, given that Twitto related more closely to the physical exhibits than Monuments did. It is possible that the difference in tempo between the two games has contributed: Perhaps the time pressure described by Twitto test players led them to ignore the artefacts, instead only focusing on finding the scannable markers to advance in the game. However it seems more likely that difference was caused by the different strategies taken by the two games: In contrast to Twitto, which tried but failed to connect fully with the artefacts, Monuments may have seemed more acceptable because it was not perceived as dealing with the physical exhibits at all, but rather introducing and exploring a theme from outside the exhibition - arguably adding a relevant perspective to the exhibition, rather than detracting from it.

7.3 Challenging the curatorial authority

An important concern in any design process is the involvement of stakeholders. As described above, in the case of Twitto museum representatives were invited into the design process at an early stage and participated in multiple workshops and tests throughout the process. Even so, later meetings and discussions with museum representatives have made it clear that they did not feel sufficiently involved in the design. On the one hand, this is a problem because they are uncomfortable with the way in which the game presents the museum's collections – in particular, the museum would like to reduce the strong association between Tito and the museum, instead focusing on the importance of Yugoslav history more broadly. As such, the Twitto concept with its strong focus on Tito as a historic (and satirical) figure runs contrary to the museum's strategy. On the other hand, the nature of the game may also run counter to the professional identity of the museum professionals, as the game offers fairly little space for factual information about the collections, instead emphasizing the invitation to play and create content.

Museums have engaged in activities resembling critical play in the past. However, such activities have tended to be framed as events, often as part of interactive art performances, festivals or similar (e.g. [50, 71, 79]). In contrast, Twitto was designed not to form part of a special event, but rather as a permanent part of the regular exhibition, filling a conceptual role similar to that of an interactive guide application. This may have affected the expectations both of the participants and the museum professionals, leading them to expect the game to speak with the museum's "voice" as a part of the museum's official communication towards visitors.

In a later workshop taking place after the Twitto playtest, in which the design team and museum representatives were exploring paths forward, a curator explained:

> we had the same impression that the way of engagement is really interesting (...) and it was the content that was bothering us, that was the thing, we felt that it would be much better if the games would be accompanied with the knowledge of the curators, and combining the two.

In Monuments, by contrast, the strong thematic focus on artefacts that were not physically represented in the exhibition may have given the experience a different framing in the participants' minds, resembling less a guide and more a thematic exhibition or event, which regularly occurs in many museums (including the Museum of Yugoslavia) and does not always have a direct connection to the museum's own collection of artefacts.

Moreover, Monuments seems to have followed a more accepted path in terms of museum pedagogy. Using Witcomb-inspired "poetic provocations" to foster critical awareness, proved, in this case, to be a more acceptable design strategy than using satire for the same purpose. This is interesting considering that research in psychology shows that using humor can serve as a coping mechanism to deal with challenging topics and traumas[82, 90, 132].

One might consider that the playful format not only sets up a tension between the desire to facilitate engagement, on the one hand, and to educate on the other; but there is also a potential threat to the professional roles of museum curators and educators, who might see their role as diminished when traditional modes of dissemination and education are replaced with play. In this case, this threat was, perhaps not surprisingly, even amplified by the introduction of play which encouraged visitors to turn a critical eye towards the museum itself.

8 CONCLUDING REMARKS

In this article we have explored two prototypes of hybrid museum experiences designed to facilitate critical play, identifying some challenges relating to norms for museum behaviour, the role of artefacts and the role of curators. In conclusion we outline some suggestions for future research.

First, regarding norms for museum visits, we have noted above that the fact that our designs did not set up a sufficient 'magic circle' for play, may have contributed to the awkwardness experienced by many players. This observation could lead to two opposite strategies in future work: First, one might attempt to help future players by designing games that are more clearly positioned within spatial and temporal limits, perhaps as part of special events, in which a clear license to engage in play is established. Or, second, the challenge regarding norms might be treated as a design challenge: Can we design hybrid museum experiences that introduce elements of critical play in an "ordinary" museum visit, making playfulness an integral part of the museum visit? Another prototype from the GIFT project might serve as an example of this strategy, in which players were tasked with controlling each others as avatars during a museum visit [105, 106]. When playtesting this prototype, some players had fun with purposely creating situations where the "avatar" would have to do strange acts in front of other visitors who were not aware that they were playing a game - thus playing with transgressing the norms of visitor behaviour.

Furthermore, it is worth noting that the ongoing COVID-19 pandemic has already lead to some changes in the ways visitors are able to engage with technology in museums. In some cases museums have had to reconsider what types of installations may be used, due to new rules for hygiene including frequent disinfection etc. One of the participating museums in the GIFT project report that visitors appear to be more willing to use interactive guides on their own smartphone devices than before the pandemic started - perhaps due to hygiene concerns with borrowing equipment from the museum. It is possible that such changes may shift visitors' habits and expectations also in the longer term.

Similarly, one can envisage two alternative strategies for future work in addressing the challenge with connecting hybrid experiences to physical artefacts: On the one hand, future research might explore alternative approaches that allow digital interactions to serve as an augmentation but not a distraction from the physical artefacts. One promising avenue for such research are designs based on image recognition, as employed in the popular museum app Smartify [2], which can recognize artworks that the user point their camera at, and returns information about that artwork. By focusing the user's interaction on the artwork itself, rather than a scannable marker, this technique may help secure that the user's attention stays with the artefact. A central challenge for such work is designing the information delivery and interactions that happen after the artwork has been scanned. One approach to this challenge is explored in [74].

On the other hand, future work might choose to challenge the notion that museum artefacts should always be the centre of attention for museum visitors, reflecting the museological debate about whether museums are primarily about objects or ideas. The design of *Monuments for a Departed Future* points out one possible direction for such designs. However, designers and researchers going in this direction should be prepared for critical reactions from museum curators.

Challenging the role of curatorial authority may in some regard be unavoidable, as creating hybrid experiences requires that the museum involves outside experts such as designers and developers. This entails that the museum professionals hand over some of the power (and responsibility) of shaping the museum experience. However, this does not necessarily mean that they are willing to hand over also the power (or responsibility) for the content and curatorial decisions involved in the experience. This may perhaps be surprising, running counter to the ideals of new museology and critical museology, which often emphasise relinquishing control over curation and favoring more participatory approaches. Given the playful implications of hybrid experiences, the borderline between design and curation may be challenging to navigate. This means that designers of hybrid museum experiences which foster play - especially critical play - may need to pay much attention to involving curators in the process, and negotiating responsibilities regarding content and presentation. Similarly, museum professionals interested in facilitating critical play through hybrid experiences should be prepared to encounter multiple challenges, and perhaps may need to let go of more of their curatorial control than they might expect.

9 ACKNOWLEDGMENTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727040 (the GIFT project).

REFERENCES

[1] 2014. Strategic plan 2014-2018 Museum of Yugoslav History.
[2] 2019. Smartify. https://smartify.org/
[3] Espen Aarseth. 2007. I Fought the Law: Transgressive Play and The Implied Player. In *Proceedings of the 2007 DiGRA International Conference: Situated Play*, Vol. 4. Digital Games Research Association (DiGRA).
[4] Susan Ali, Boriana Koleva, Ben Bedwell, and Steve Benford. 2018. Deepening visitor engagement with museum exhibits through hand-crafted visual markers. In *Proceedings of the 2018 on Designing Interactive Systems Conference 2018 - DIS '18*. Hong Kong, China, 523–534. https://doi.org/10.1145/3196709.3196786
[5] Susan Ali, Boriana Koleva, Ben Bedwell, and Steve Benford. 2018. Deepening visitor engagement with museum exhibits through hand-crafted visual markers. In *DIS 2018 - Proceedings of the 2018 Designing Interactive Systems Conference*. ACM Press, New York, 523–534. https://doi.org/10.1145/3196709.3196786
[6] Jens Andermann and Silke Arnold-de Simine. 2012. Introduction: Memory, community and the new museum. *Theory, Culture & Society* 29, 1 (2012), 3–13. https://doi.org/10.1177/0263276411423041
[7] Eike Falk Anderson, Leigh McLoughlin, Fotis Liarokapis, Christopher Peters, Panagiotis Petridis, and Sara de Freitas. 2010. Developing serious games for cultural heritage: a state-of-the-art review. *Virtual Reality* 14, 4 (Dec. 2010), 255–275. https://doi.org/10.1007/s10055-010-0177-3
[8] Anna Anthropy. [n.d.]. w.itch.io. https://w.itch.io/
[9] Cory Arcangel. [n.d.]. Cory Arcangel. http://coryarcangel.com/about/
[10] Nikolaos Avouris and Nikoleta Yiannoutsou. 2012. A review of mobile location-based games for learning across physical and virtual spaces. *Journal of Universal Computer Science* 18 (2012).
[11] Gabriela Avram and Laura Maye. 2016. Co-designing Encounters with Digital Cultural Heritage. ACM Press, New York, 17–20.
[12] Mikhail Bakhtin. 1984. *Rabelais and His World*. Indiana University Press, Bloomington.
[13] Mikhail Bakhtin. 2008. *Problems of Dostoevsky's Poetics*. University of Texas Press, Austin.
[14] Liam Bannon, Steve Benford, John Bowers, and Christian Heath. 2005. Hybrid Design Creates Innovative Museum Experiences. *Commun. ACM* 48, 3 (March 2005), 62–65. https://doi.org/10.1145/1047671.1047706
[15] Katy Beale. 2011. *Museums At Play – Games, Interaction and Learning*. MuseumsEtc, Edinburgh.
[16] Genevieve Bell. 2002. Making Sense of Museums: The Museum as 'Cultural Ecology'. *Intel Labs* (2002), 1–17. http://echo.iat.sfu.ca/library/bell_02_museum_ecology.pdf
[17] Steve Benford and Gabriella Giannachi. 2011. *Performing mixed reality*. MIT Press, Cambridge, MA; London. http://dl.acm.org/citation.cfm?id=2030028
[18] Steve Benford, Gabriella Giannachi, Boriana Koleva, and Tom Rodden. 2009. From Interaction to Trajectories: Designing Coherent Journeys Through User Experiences. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '09)*. ACM, New York, NY, USA, 709–718. https://doi.org/10.1145/1518701.1518812
[19] Steve Benford, Chris Greenhalgh, Andy Crabtree, Martin Flintham, Brendan Walker, Joe Marshall, Boriana Koleva, Stefan Rennick Egglestone, Gabriella Giannachi, Matt Adams, and others. 2013. Performance-led research in the wild. *ACM Transactions on Computer-Human Interaction (TOCHI)* 20, 3 (2013), 14. http://dl.acm.org/citation.cfm?id=2491502
[20] Karl Bergström, Annika Waern, Daniel Rosqvist, and Lisa M\aansson. 2014. Gaming in the Crucible of Science: Gamifying the Science Center Visit. In *Proceedings of the 11th Conference on Advances in Computer Entertainment Technology (ACE '14)*. ACM, New York, NY, USA, 2:1–2:10. https://doi.org/10.1145/2663806.2663840 event-place: Funchal, Portugal.
[21] Michael L. Blakey. 1998. The New York African Burial Ground Project: An Examination of Enslaved Lives, A Construction of Ancestral Ties. *Transforming Anthropology* 7, 1 (1998), 53–58. https://doi.org/10.1525/tran.1998.7.1.53
[22] Ian Bogost. 2007. *Persuasive Games: The Expressive Power of Videogames*. The MIT Press, Cambridge, Massachusetts and London, England.
[23] Brenda Brathwaite and John Sharp. 2010. The Mechanic is the Message: A Post Mortem in Progress. In *Ethics and Game Design: Teaching Values through Play*, Karen Schrier and David Gibson (Eds.). IGI Global, 311–329. https://doi.org/10.4018/978-1-61520-845-6.ch019

ISBN: 9781615208456 Pages: 311-329 Publisher: IGI Global.

[24] Jennie Carroll, Steve Howard, Frank Vetere, Jane Peck, and John Murphy. 2001. Identity, Power And Fragmentation in Cyberspace: Technology Appropriation by Young People. *ACIS 2001 Proceedings* (Jan. 2001). https://aisel.aisnet.org/acis2001/6

[25] M. Chalmers. 2003. Seamful design: showing the seams in wearable computing. *IET Conference Proceedings* (January 2003), 11–16(5). https://digital-library.theiet.org/content/conferences/10.1049/ic_20030140

[26] Matthew Chalmers and Areti Galani. 2004. Seamful Interweaving: Heterogeneity in the Theory and Design of Interactive Systems. In *Proceedings of the 5th Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques (DIS '04)*. Association for Computing Machinery, New York, NY, USA, 243–252. https://doi.org/10.1145/1013115.1013149

[27] Luigina Ciolfi, Gabriela Avram, Laura Maye, Nick Dulake, Mark T. Marshall, Dick van Dijk, and Fiona McDermott. 2016. Articulating Co-Design in Museums: Reflections on Two Participatory Processes. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, Vol. 19. ACM Press, New York, 13–25.

[28] Luigina Ciolfi, Liam J. Bannon, and Mikael Fernström. 2008. Including Visitor Contributions in Cultural Heritage Installations: Designing for Participation. *Museum Management and Curatorship* 23, 4 (Dec. 2008), 353–365. https://doi.org/10.1080/09647770802517399

[29] Luigina Ciolfi and Marc McLoughlin. 2012. Designing for Meaningful Visitor Engagement at a Living History Museum. In *Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design (NordiCHI '12)*. ACM, New York, NY, USA, 69–78. https://doi.org/10.1145/2399016.2399028

[30] Caroline Claisse. 2017. The Augmented House Museum: Co-Exploring Tangible Interaction to Increase Engagement with Heritage in House Museums. In *Proceedings of the 2017 ACM Conference Companion Publication on Designing Interactive Systems (DIS '17 Companion)*. ACM, New York, NY, USA, 380–381. https://doi.org/10.1145/3064857.3079162

[31] Tanguy Coenen, Lien Mostmans, and Kris Naessens. 2013. MuseUs: Case Study of a Pervasive Cultural Heritage Serious Game. *ACM Journal on Computing and Cultural Heritage* 6, 2 (2013). https://doi.org/10.1145/2460376.2460379

[32] Brody Condon. [n.d.]. Brody Condon. https://brodycondon.com/

[33] Andy Crabtree, Alan Chamberlain, Rebecca E Grinter, Matt Jones, Tom Rodden, and Yvonne Rogers. 2013. Introduction to the special issue of "The Turn to The Wild". *ACM Transactions on Computer-Human Interaction (TOCHI)* 20, 3 (2013), 13.

[34] Simon Critchley. 2011. *On Humour (Thinking in Action)*. Routledge.

[35] Peter Dalsgaard, Christian Dindler, and Eva Eriksson. 2008. Designing for Participation in Public Knowledge Institutions. In *Proceedings of the 5th Nordic Conference on Human-computer Interaction: Building Bridges (NordiCHI '08)*. ACM, New York, NY, USA, 93–102. https://doi.org/10.1145/1463160.1463171

[36] Erica Danniels and Angela Pyle. 2018. Defining Play-based Learning. , 5 pages. http://ceril.net/index.php/articulos?id=594

[37] Dimitrios Darzentas, Martin Flintham, and Steve Benford. 2018. Object-focused mixed reality storytelling. ACM, New York, 278–281. https://doi.org/10.1145/3291533.3291588

[38] Joseph DeLappe. [n.d.]. Joseph DeLappe. http://www.delappe.net/

[39] Alan Dix. 2007. Designing for appropriation. In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI...but not as we know it - Volume 2 (BCS-HCI '07)*. BCS Learning & Development Ltd., University of Lancaster, United Kingdom, 27–30.

[40] Paul Dourish. 2001. *Where the Action Is: The Foundations of Embodied Interaction*. The MIT Press, Cambridge, MA. https://mitpress.mit.edu/books/where-action

[41] Danielle Drozdzewski, Sarah De Nardi, and Emma Waterton (Eds.). 2016. *Memory, Place and Identity: Commemoration and remembrance of war and conflict*. Routledge, London.

[42] Carol Duncan. 1995. The art museum as ritual. In *Civilizing rituals: inside public art museums*. Routledge, London, 7–18.

[43] Nick Dyer-Witheford and Greig de Peuter. 2009. *Games of Empire: Global Capitalism and Video Games*. Univ Of Minnesota Press.

[44] Lina Eklund. 2020. A Shoe Is a Shoe Is a Shoe: Interpersonalization and Meaning-making in Museums – Research Findings and Design Implications. *International Journal of Human-Computer Interaction* (2020). https://doi.org/10.1080/10447318.2020.1767982

[45] Mary Flanagan. 2009. *Critical Play: Radical Game Design*. The MIT Press, Cambridge, MA.

[46] Lesley Fosh, Steve Benford, and Boriana Koleva. 2016. Supporting Group Coherence in a Museum Visit. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW '16)*. ACM, New York, NY, USA, 1–12. https://doi.org/10.1145/2818048.2819970

[47] Lesley Fosh, Steve Benford, Stuart Reeves, Boriana Koleva, and Patrick Brundell. 2013. 'See Me, Feel Me, Touch Me, Hear Me': Trajectories and Interpretation in a Sculpture Garden. In *CHI 2013: Changing Perspectives*. ACM, Paris, France.

[48] Gonzalo Frasca. 2007. Play the message: Play, game and videogame rhetoric. *Unpublished PhD dissertation. IT University of Copenhagen, Denmark* (2007).

[49] Michael L. Galaty. 2011. Blood of Our Ancestors: Cultural Heritage Management in the Balkans. In *Contested Cultural Heritage: Religion, Nationalism, Erasure, and Exclusion in a Global World*, Helaine Silverman (Ed.). Springer, New York, NY, 109–124. https://doi.org/10.1007/978-1-4419-7305-4_4

[50] Haidy Geismar. 2015. The Art of Anthropology: Questioning Contemporary Art in Ethnographic Display. In *Museum Theory*. Wiley.

[51] Gabriella Giannachi. 2009. San Francisco Museum of Modern Art | The Art of Participation: 1950 to Now. *Digital Creativity* 20, 1-2 (2009), 125–131. https://doi.org/10.1080/14626260902875223

[52] George E. Hein. 1998. *Learning in the Museum.* Routledge, New York.

[53] Thomas S. Henricks. 2009. Orderly and Disorderly Play. *American Journal of Play* 2, 1 (2009), 12–40.

[54] Thomas S. Henricks. 2015. *Play and the Human Condition.* University of Illinois Press.

[55] Thomas Hillman and Alexandra Weilenmann. 2015. Situated Social Media Use: A Methodological Approach to Locating Social Media Practices and Trajectories. In *Proceedings of the ACM CHI'15 Conference on Human Factors in Computing Systems.* ACM Press, New York, 4057–4060. https://doi.org/10.1145/2702123.2702531

[56] Lissa Holloway-Attaway and Björn Berg-Marklund. 2020. Performing Heritage and Creating Community Through Digital Games, Narrative Agency and Critical Play – MW20 | Online. In *MW20.* https://mw20.museweb.net/paper/performing-heritage-and-creating-community-through-digital-games-and-critical-play/

[57] Eilean Hooper-Greenhill. 2000. *Museums and the Interpretation of Visual Culture.* Number 4 in Museum Meanings. Routledge.

[58] Eva Hornecker. 2016. The To-and-Fro of Sense Making: Supporting Users&Rsquo; Active Indexing in Museums. *ACM Trans. Comput.-Hum. Interact.* 23, 2 (May 2016), 10:1–10:48. https://doi.org/10.1145/2882785

[59] Eva Hornecker and Luigina Ciolfi. 2019. Human-Computer Interactions in Museums. *Synthesis Lectures on Human-Centered Informatics* 12, 2 (2019), i–171. https://doi.org/10.2200/S00901ED1V01Y201902HCI042 arXiv:https://doi.org/10.2200/S00901ED1V01Y201902HCI042

[60] David Howes. 2014. Introduction to sensory museology. *Senses and Society* 9, 3 (2014), 259–267. https://doi.org/10.2752/174589314X14023847039917

[61] S. Hsi. 2003. A study of user experiences mediated by nomadic web content in a museum. *Journal of Computer Assisted Learning* 19, 3 (2003), 308–319. https://doi.org/10.1046/j.0266-4909.2003.jca_023.x _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1046/j.0266-4909.2003.jca_023.x.

[62] Johan Huizinga. 1998. *Homo Ludens: a study of the play-element in culture.* Routledge, London.

[63] Wolfgang Hürst, Xhi Jia Tan, and Ferdinand De Coninck. 2016. Using digital extensions to create new VR museum experiences. In *ACM International Conference Proceeding Series.* https://doi.org/10.1145/3001773.3001822

[64] Steffi de Jong. 2018. *The Witness as Object: Video Testimony in Memorial Museums.* Berghahn Books, New York.

[65] Kristine Jørgensen and Faltin Karlsen (Eds.). 2019. *Transgression in Games and Play.* MIT Press.

[66] Akrivi Katifori, Sara Perry, Maria Vayanou, Angeliki Antoniou, Ioannis-Panagiotis Ioannidis, Sierra McKinney, Angeliki Chrysanthi, and Yannis Ioannidis. 2020. "Let Them Talk!": Exploring Guided Group Interaction in Digital Storytelling Experiences. *J. Comput. Cult. Herit.* 13, 3, Article 21 (Aug. 2020), 30 pages. https://doi.org/10.1145/3382773

[67] Jenny Kidd. 2018. "Immersive" heritage encounters. *The Museum Review* 3, 1 (2018).

[68] Jenny Kidd and Rosie Cardiff. 2017. 'A space of negotiation': Visitor Generated Content and Ethics at Tate. *Museum and Society* 15, 1 (2017), 43–55. https://journals.le.ac.uk/ojs1/index.php/mas/article/view/661

[69] Bohyun Kim. 2015. Chapter 4. Gamification in Education and Libraries. *Library Technology Reports* 51, 2 (March 2015), 20–28. https://journals.ala.org/index.php/ltr/article/view/5631

[70] Timothy R. Landry. 2011. Touring the Slave Route: Inaccurate Authenticities in Bénin, West Africa. In *Contested Cultural Heritage: Religion, Nationalism, Erasure, and Exclusion in a Global World*, Helaine Silverman (Ed.). Springer, New York, NY, 205–231. https://doi.org/10.1007/978-1-4419-7305-4_10

[71] Erica Lehrer and Shelley Ruth Butler. 2016. *Curatorial Dreams: Critics Imagine Exhibition.* McGill-Queen's University Press.

[72] Grace Lindsay. 2014. Critical Games: Critical Design in Independent Games. In *ResearchGate.* Digital Games Research Association, University of Utah, Salt Lake City, Utah, USA. https://www.researchgate.net/publication/267153275_Critical_Games_Critical_Design_in_Independent_Games

[73] Leilah Lyons. 2009. Designing opportunistic user interfaces to support a collaborative museum exhibit. In *Proceedings of the 9th international conference on Computer supported collaborative learning - Volume 1 (CSCL'09).* International Society of the Learning Sciences, Rhodes, Greece, 375–384.

[74] Anders Sundnes Løvlie, Lina Eklund, Annika Waern, Karin Ryding, and Paulina Rajkowska. [n.d.]. Designing for interpersonal museum experiences. In *Museums and the Challenge of Change: old institutions in a new world*, Graham Black (Ed.). Routledge, London & New York.

[75] Minhua Ma, Sarah Coward, and Chris Walker. 2015. Interact: A mixed reality virtual survivor for holocaust testimonies. In *OzCHI 2015: Being Human - Conference Proceedings.* 250–254. https://doi.org/10.1145/2838739.2838803

[76] Sharon MacDonald. 2008. *Difcult Heritage: Negotiating the Nazi Past in Nuremberg and Beyond.* Routledge, London.

[77] Nadia Magnenat-Thalmann and George Papagiannakis. 2005. Virtual worlds and augmented reality in cultural heritage applications. *Recording, modeling and visualization of cultural heritage* (2005), 419–430. https://www.google.com/books?hl=en&lr=&id=CPOGPVQHcO8C&oi=fnd&pg=PA419&dq=Magnenat-Thalmann,+N.,+%26+Papagiannakis,+G.+(2005).+Virtual+worlds+and+augmented+reality+in+cultural+heritage+applications.%C2%A0Recording,+modeling+and+visualization+of+cultural+heritage,+419-430.&ots=b8j1BAU0BR&sig=wWwCF5OPeJ2EAfwLTb8Ego-Jbwk

[78] Irini Malegiannaki and hanasis Daradoumis. 2017. Analyzing the educational design, use and effect of spatial games for cultural heritage: A literature review. *Computers & Education* 108 (May 2017), 1–10. https://doi.org/10.1016/j.compedu.2017.01.007

[79] Bruce Mannheim and Ruth Behar. 1995. In Dialogue: The Couple in the Cage: A Guatinaui Odessy. *Visual Anthropology Review* 11, 1 (1995), 118–127. https://doi.org/10.1525/var.1995.11.1.118

[80] Mark T. Marshall, Nick Dulake, Luigina Ciolfi, Daniele Duranti, Hub Kockelkorn, and Daniela Petrelli. 2016. Using tangible smart replicas as controls for an interactive museum exhibition. In *TEI 2016 - Proceedings of the 10th Anniversary Conference on Tangible Embedded and Embodied Interaction*. 159–167. https://doi.org/10.1145/2839462.2839493

[81] Mark T. Marshall, Nick Dulake, Daniela Petrelli, and Hub Kockelkorn. 2015. From the deposit to the exhibit floor: An exploration on giving museum objects personality and social life. In *CHI'15 Extended Abstracts*, Vol. 18. ACM, New York, 1917–1922. https://doi.org/10.1145/2702613.2732872

[82] Rod A Martin and Thomas Ford. 2018. *The psychology of humor: An integrative approach.* Academic press.

[83] Annette Mees. 2011. Art Heist, 2010: An Interactive Adventure by Coney. In *Museums at Play: Games, Interaction and Learning*, Katy Beale (Ed.). MuseumsEtc, Edinburgh, 84–95.

[84] Rupert Meese, Shakir Ali, Emily-Clare Thorne, Steve D. Benford, Anthony Quinn, Richard Mortier, Boriana N. Koleva, Tony Pridmore, and Sharon L. Baurley. 2013. From Codes to Patterns: Designing Interactive Decoration for Tableware. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. ACM, New York, NY, USA, 931–940. https://doi.org/10.1145/2470654.2466119

[85] Molleindustria. [n.d.]. Molleindustria. https://www.molleindustria.org/

[86] Molleindustria. 2011. Phone Story. http://www.phonestory.org/

[87] Markus Montola, Jaakko Stenros, and Annika Waern (Eds.). 2009. *Pervasive Games: Theory and Design.* Morgan Kaufmann Publishers, Burlington, MA.

[88] Monica Nilsson, Beth Ferholt, and Robert Lecusay. 2018. 'The playing-exploring child': Reconceptualizing the relationship between play and learning in early childhood education. *Contemporary Issues in Early Childhood* 19, 3 (2018), 231–245.

[89] Christena Nippert-Eng. 2005. Boundary Play. *Space and Culture* 8, 3 (Aug. 2005), 302–324.

[90] James C Overholser. 1992. Sense of humor when coping with life stress. *Personality and individual differences* 13, 7 (1992), 799–804.

[91] Jeni Paay, Jesper Kjeldskov, Anders Christensen, Andreas Ibsen, Dan Jensen, Glen Nielsen, and Renè Vutborg. 2008. Location-based storytelling in the urban environment. In *OZCHI 2008: Designing for Habitus and Habitat.* Cairns, Australia.

[92] I. Paliokas and S. Sylaiou. 2016. The Use of Serious Games in Museum Visits and Exhibitions: A Systematic Mapping Study. In *2016 8th International Conference on Games and Virtual Worlds for Serious Applications (VS-GAMES)*. 1–8.

[93] Ross Parry. 2007. *Recoding the Museum: digital heritage and the technologies of change.* Routledge, New York.

[94] Daniela Petrelli, Luigina Ciolfi, Dick van Dijk, Eva Hornecker, Elena Not, and Albrecht Schmidt. 2013. Integrating Material and Digital: A New Way for Cultural Heritage. *Interactions* 20, 4 (July 2013), 58–63. https://doi.org/10.1145/2486227.2486239

[95] Daniela Petrelli and Sinead O'Brien. 2018. Phone vs. Tangible in Museums. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, New York, 1–12. https://doi.org/10.1145/3173574.3173686

[96] Lukas Pope. 2013. Papers, please. https://papersplea.se/

[97] Cindy Poremba. 2007. Critical Potential on the Brink of the Magic Circle. In *2007 International DiGRA Conference*. 772–778.

[98] William Preston, Steve Benford, Emily-Clare Thorn, Boriana Koleva, Stefan Rennick-Egglestone, Richard Mortier, Anthony Quinn, John Stell, and Michael Worboys. 2017. Enabling Hand-Crafted Visual Markers at Scale. In *Proceedings of the 2017 Conference on Designing Interactive Systems (DIS '17)*. ACM, New York, NY, USA, 1227–1237. https://doi.org/10.1145/3064663.3064746

[99] Donald Malcolm Reid. 2002. *Whose Pharaohs?: Archaeology, Museums, and Egyptian National Identity from Napoleon to World War I* (1 ed.). University of California Press, Oakland, CA. www.jstor.org/stable/10.1525/j.ctt1ppdp5

[100] Stefan J. Rennick-Egglestone, Patrick Brundell, Boriana Koleva, Steve Benford, Maria Roussou, and Cristophe Chaffardon. 2016. Families and mobile devices in museums: designing for integrated experiences. *ACM Journal on Computing and Cultural Heritage* 9 (2016). https://doi.org/10.1145/2891416

[101] Martin Risseeuw, Dario Cavada, Elena Not, Massimo Zancanaro, Mark T. Marshall, Daniela Petrelli, and Thomas Kubitza. 2016. Authoring Augmented Digital Experiences in Museums. In *Proceedings of the International Working Conference on Advanced Visual Interfaces (AVI '16)*. ACM, New York, NY, USA, 340–341. https://doi.org/10.1145/2909132.2926064

[102] Jon Roozenbeek and Sander van der Linden. 2019. Fake news game confers psychological resistance against online misinformation. *Palgrave Communications* 5, 1 (June 2019), 1–10. https://doi.org/10.1057/s41599-019-0279-9 Number: 1 Publisher: Palgrave.

[103] Asreen Rostami, Chiara Rossitto, and Annika Waern. 2018. Frictional Realities: Enabling Immersion in Mixed-Reality Performances. In *Proceedings of the 2018 ACM International Conference on Interactive Experiences for TV and Online Video (TVX '18)*. Association for Computing Machinery, New York, NY, USA, 15–27. https://doi.org/10.1145/3210825.3210827

[104] Bonnie Ruberg and Adrienne Shaw (Eds.). 2017. *Queer Games Studies.* Univ Of Minnesota Press.

[105] Karin Ryding. 2020. The Silent Conversation: Designing for Introspection and Social Play in Art Museums. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. Association for Computing Machinery, Honolulu, HI, USA, 1–10. https://doi.org/10.1145/3313831.3376357

[106] Karin Ryding and Jonas Fritsch. 2020. Play Design as a Relational Strategy to Intensify Affective Encounters in the Art Museum. In *Proceedings of the 2020 ACM on Designing Interactive Systems Conference (DIS '20)*. Association for Computing Machinery, Eindhoven, Netherlands, 681–693. https://doi.org/10.1145/3357236.3395431

[107] Anthony Shelton. 2013. Critical Museology A Manifesto. *Museum Worlds: Advances in Research* 1, 1 (2013), 7–23. https://doi.org/10.3167/armw.2013.010102

[108] Miguel Sicart. 2014. *Play Matters*. MIT Press.

[109] Miguel Sicart. 2019. Papers, please. In *How to Play Video Games*, Matthew Thomas Payne and Nina B. Huntemann (Eds.). NYU Press, New York, 149–156.

[110] Helaine Silverman and D. Fairchild Ruggles. 2007. Cultural Heritage and Human Rights. In *Cultural Heritage and Human Rights*, Helaine Silverman and D. Fairchild Ruggles (Eds.). Springer-Verlag, New York, 3–29. https://doi.org/10.1007/978-0-387-71313-7

[111] Lois H. Silverman. 2010. *The Social Work of Museums*. Routledge, London.

[112] Nina Simon. 2010. *The participatory museum*. Museum 2.0, Santa Cruz, California. http://www.participatorymuseum.org/

[113] Laurajane Smith. 2006. *Uses of Heritage*. Routledge, London. https://doi.org/10.4324/9780203602263

[114] Jocelyn Spence, Benjamin Bedwell, Michelle Coleman, Steve Benford, Boriana N. Koleva, Matt Adams, Ju Row Farr, Nick Tandavanitj, and Anders Sundnes Løvlie. 2019. Seeing with New Eyes: Designing for In-the-Wild Museum Gifting. In *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2019)*. ACM, Glasgow, Scotland, UK. https://doi.org/10.1145/3290605.3300235

[115] Jakko Stenros. 2012. In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play. In *2012 International DiGRA Nordic Conference*, Vol. 10. 1–19.

[116] Jakko Stenros and Markus Montola (Eds.). 2010. *Nordic Larp*. Fëa Livia. https://trepo.tuni.fi/bitstream/handle/10024/95123/nordic_larp_2010.pdf?sequence=1&isAllowed=y

[117] Jenny Sundén. 2009. Play as Transgression: An Ethnographic Approach to Queer Game Cultures. In *DiGRA '09 - Proceedings of the 2009 DiGRA International Conference: Breaking New Ground: Innovation in Games, Play, Practice and Theory*. Digital Games Research Association (DiGRA).

[118] Brian Sutton-Smith. 1999. Evolving a consilience of play definitions: Playfully. In *Play Contexts Revisited*, Stuart Reifel (Ed.). Play & Culture Studies, Vol. 2. Praeger Publishers Inc, 239–256.

[119] Blast Theory. 2011. Fixing Point. http://www.blasttheory.co.uk/projects/fixing-point/

[120] Blast Theory. 2011. Ghostwriter. https://www.blasttheory.co.uk/projects/ghostwriter/

[121] Peter Tolmie, Steve Benford, Chris Greenhalgh, Tom Rodden, and Stuart Reeves. 2014. Supporting Group Interactions in Museum Visiting. In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW '14)*. ACM, New York, NY, USA, 1049–1059. https://doi.org/10.1145/2531602.2531619

[122] Kali Tzortzi. 2014. Movement in museums: mediating between museum intent and visitor experience. *Museum Management and Curatorship* 29, 4 (2014), 327–348. https://doi.org/10.1080/09647775.2014.939844

[123] Maria Vayanou, Yannis Ioannidis, George Loumos, and Antonis Kargas. 2019. How to play storytelling games with masterpieces: from art galleries to hybrid board games. *Journal of Computers in Education* 6, 1 (March 2019), 79–116. https://doi.org/10.1007/s40692-018-0124-y

[124] Peter Vergo. 1989. *The New museology*. Reaktion Books.

[125] Peter Vergo (Ed.). 1997. *The new museology*. Reaktion books, London.

[126] Dirk vom Lehn, Christian Heath, and Hubert Knoblauch. 2001. Configuring Exhibits: the interactional production of experience in museums and galleries. In *Verbal Art Across Cultures: Theaesthetics and proto-aesthetics of communication*, Hubert Knoblauch and H. Kotthoff (Eds.). Vol. 10. Gunter Narr Verlag, Tübingen, 281–296. https://www.academia.edu/193785/Configuring_Exhibits_the_interactional_production_of_experience_in_museums_and_galleries

[127] Eliséo Véron and Martine Levasseur. 1989. *Ethnographie de l'exposition: l'espace, le corps et le sens*. Bibliothèque publique d'information du Centre Pompidou, Paris, France.

[128] Ron Wakkary and Marek Hatala. 2007. Situated play in a tangible interface and adaptive audio museum guide. *Personal and Ubiquitous Computing* 11, 3 (Feb. 2007), 171–191. https://doi.org/10.1007/s00779-006-0101-8

[129] Tony Walter. 1996. From museum to morgue? Electronic guides in Roman Bath. *Tourism Management* 17, 4 (June 1996), 241–245. https://doi.org/10.1016/0261-5177(96)00015-5

[130] Stephen Weil. 1994. The proper business of the museum: ideas or things? In *Museum Provision and Professionalism*, Gayvor Kavanagh (Ed.). Routledge, London, 93–100.

[131] Daniel Wessel and Eva Mayr. 2007. Potentials and Challenges of Mobile Media in Museums. *International Journal of Interactive Mobile Technologies (iJIM)* 1, 1 (Oct. 2007). http://journals.sfu.ca/onlinejour/index.php/i-jim/article/view/165

[132] Julia Wilkins and Amy Janel Eisenbraun. 2009. Humor theories and the physiological benefits of laughter. *Holistic nursing practice* 23, 6 (2009), 349–354.

[133] Andrea Witcomb. 1997. On the Side of the Object: an Alternative Approach to Debates About Ideas, Objects and Museums. *Museum Management and Curatorship* 16, 4 (Dec. 1997), 383–399. https://doi.org/10.1080/09647779700501604

[134] Andrea Witcomb. 2013. Understanding the role of affect in producing a critical pedagogy for history museums. *Museum Management and Curatorship* 28, 3 (June 2013), 255–271. https://doi.org/10.1080/09647775.2013.807998

[135] Allison Woodruff, Paul Aoki, Amy Hurst, and Margaret Szymanski. 2001. Electronic Guidebooks and Visitor Attention. In *International Cultural Heritage Informatics Meeting: Proceedings from ichim01*, D. Bearman and F. Garzotto (Eds.). Archives & Museum Informatics, Milano, Italy. http://www.archimuse.com/publishing/ichim01_vol1/woodruff.pdf

[136] Massimo Zancanaro, Tsvi Kuflik, Zvi Boger, Dina Goren-Bar, and Dan Goldwasser. 2007. Analyzing Museum Visitors' Behavior Patterns. In *Proceedings of International Conference on User Modeling 2007*. Springer, 238–246.

[137] Bruce H. Ziff and Pratima V. Rao (Eds.). 1997. *Borrowed Power: Essays on Cultural Appropriation.* Rutgers University Press. Google-Books-ID: BhAhb2lf49oC.

[138] John Zimmerman, Jodi Forlizzi, and Shelley Evenson. 2007. Research Through Design As a Method for Interaction Design Research in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '07)*. ACM, New York, NY, USA, 493–502. https://doi.org/10.1145/1240624.1240704

Paper 3:

The Silent Conversation: Designing for Introspection and Social Play in Art Museums.

Ryding, K.

Published in:
In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI'20). ACM, 1-10.

The Silent Conversation: Designing for Introspection and Social Play in Art Museums

Karin Ryding
Digital Design Department
IT University Copenhagen, DK
kary@itu.dk

ABSTRACT

This paper presents an attempt to design for a combination of social play and introspection using a ludic approach within an art museum setting. The field trial is described of a mobile web app called 'Never let me go', a two-player system enabling visitors to an art museum to create impromptu experiences in-situ for a companion. The study reveals that players used the app for communicating with each other during the visit, often without speaking. This led to deeply personal and introspective moments, as well as, lots of teasing and playing. The implications of allowing for social, personal and playful experiences in an art museum are discussed, as well as, the advantages and challenges of designing for improvisation.

Author Keywords

Mobile; art; museums; experience; social; introspective; affective; play; personalisation; impromptu experience design

CSS Concepts

• **Human-centered computing→ User centered design**; *Empirical studies in interaction design;* Computer supported cooperative work.

INTRODUCTION

In HCI much work has been done on how to support instructive and informative experiences in museums through digital technology. Typically, these are experiments centred around information delivery [27,42,53,57]. However, the research also includes novel museum experiences such as participation [11,13,14], exploration [54], and play [58,61]. Recently, attempts at enhancing the emotional aspect of the experience of visiting an exhibition or a heritage site seem to be gaining increasing attention in HCI (e.g. [22,28]). This can be seen to mirror a trend in heritage and museum studies where the role of emotions and affective pedagogy is given much interest [39,49]. This shift is due, in part, to how the role of museums is changing from being about collecting, preserving and exhibiting objects, to understanding and meeting visitors' multiple needs [40]. When looking into these needs it is clear that instructive experiences are only part of what visitors consider valuable. In a major study, conducted at the Smithsonian Museums, visitors were asked to name the most satisfying experience during their visit. The results showed that apart from the expected object-related experiences (such as seeing the "real thing") and the instructive and informative experiences, the most satisfying experiences were *introspective* (focused on imagining, reflecting, reminiscing and connecting) and *social* (interactions with friends and family) [41]. These findings suggest that personalisation in museums should not only be concerned with selecting or adapting content based on the visitor's preferences or visiting style [3], but also with delivering what Fosh et al. call "deep personalisation" [21]. This means fostering museum experiences that are both deeply personal and social. Previously, in HCI, the practice of gifting has been used as a method to explore personal and social aspects of a museum visit [21,51]. This paper takes a different approach and presents an attempt to design for *introspective experiences* in combination with *social play*. The ludic approach [23] was adopted due to the possibility it provides for an open exploration of the social dynamics existing between friends or partners visiting the museum together, whilst still drawing on the intimate knowledge they have of one another.

In this paper, a design-led study is reported of a mobile web app called 'Never let me go', which enabled users to create impromptu experiences for each other, during a visit to an art museum. In order to evaluate the app, it was tested in three different art museums during the first stage of the design process. In the second stage, it was trialled with 20 participants, using qualitative methods, at the National Gallery of Denmark in Copenhagen.

BACKGROUND

The Museum Visit as a Social Event

Visiting a museum is generally a social event. People tend to come to museums in small groups, mainly with family or friends [18]. Yet, Tolmie at al. point out that there is still plenty of room for improving the support offered for groups to enhance their visiting experience [55]. Interactions with other people can in fact be crucial to whether visitors even notice particular exhibits [29]. Work has been done in HCI

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.
CHI '20, April 25–30, 2020, Honolulu, HI, USA
© 2020 Copyright is held by the owner/author(s). Publication rights licensed to ACM.
ACM 978-1-4503-6708-0/20/04…$15.00
https://doi.org/10.1145/3313831.3376357

on how to support social interactions in museums between visitors and their friends and family, in real time [25,37] and over a series of visits [51], but many aspects of the social nature of a visit have not yet been explored.

Meaning-making in Museums as a Social Process

Within the museum world, there has been a shift in the way visitors are seen and understood. From being seen as neutral, passive subjects, visitors are becoming accepted as "*active interpreters and performers of meaning-making practices within complex cultural sites*" [34:362]. According to Silverman, museum visitors create meaning out of a museum experience through the context they bring, influenced by factors such as self-identity, companions and leisure motivations [48].

Introspective experiences consists of moments in which a person turns inward and access feelings and experiences that are essentially private [41:158]. During a museum visit, introspective experiences are usually triggered by an object or a setting, but may equally be evoked by a well formulated question or a remark from a friend or a partner. From a learning perspective, Blud claims that "*interaction between visitors may be as important as interaction between the visitor and the exhibit*" [6:43].

Sociocultural theory, as exemplified by Lev Vygotsky and later by James Wertsch, emphasises how humans construct meaning in social contexts as they interact through mediators such as talk, signs, symbols, and activity structures [59]. Seeing a museum through a sociocultural lens considers the visitors as people who are in conversation with (and about) the objects on display [33,60]. This approach points to the strong potential inherent in supporting more social forms of interaction within a museum or an exhibition visit.

Play in Museums

Play in museums is often associated with treasure hunts where players follow clues and solve puzzles. Experiments have also been done with pervasive games [12] and storytelling games [56]. When studying play in the context of an adaptive museum guide, Wakkary and Hatala found that it is important that the playfulness induced by the design is not perceived to be separate from the museum environment to the point that it is distracting or doesn't make sense [58]. They refer to two forms of play that worked in a museum setting; *content play* (puns and riddles in informational content) and *physical play* (holding, touching and moving through a space). In both cases, they report that play created a higher degree of engagement with the museum artefacts.

THE POTENTIAL OF THE MAGIC CIRCLE

Play provides a cognitive frame within which we may interpret what we experience differently than we normally do [43:364–372]. This phenomenon is sometimes referred to as the "magic circle of play" [52]. According to Stenros, the magic circle is *"the social contract that is created through implicit or explicit social negotiation and metacommunication in the act of playing*" [52:14]. This social contract helps participants to deal with the potential confusion, awkwardness and "dangers" of play [46]. However, the contract is not stable as it may often be renegotiated or reinterpreted during play. The function it serves is to enable participants to seamlessly slip in and out of the "playful mindset" [2,15] whilst still upholding the game. This means that as we enter into play, we give ourselves permission to act different than we normally do, but we also accept an obligation to follow the rules agreed upon. Together, the playful mindset and the social contract of play are enablers for new social behaviour and meaning to emerge.

ORCHESTRATED OR EMERGENT EXPERIENCES

To manipulate or influence participants' perception of specific objects, environments or situations through instructions, narratives and/or music is a well-known strategy used in mixed-reality games (e.g. [63]), performance art (e.g. [32,36]) and experimental theatre (e.g. [20]). Immersive audio walks have been used successfully both in the art world (e.g. [10]) and in museums (e.g. [64]). Both music and voice are used in these cases as performative tools to create affective and thought-provoking experience away from the screen.

According to Fischer-Lichte, these types of experiences induce an extraordinary state of heightened attention, which transforms what has been ordinary into components of aesthetic experience [19:168]. An example of how these techniques have been used in HCI to enhance a visit to a sculpture garden, can be found in 'See Me, Feel Me, Touch Me, Hear Me' [22]. In this case, a sound designer and a performance poet were commissioned to compose the extended visiting experience.

Typically, though, the works described here are directed experiences, meaning that both the content and the user trajectory [5] have been carefully orchestrated by artists, curators or designers. An alternative to this strategy, is to let the experiences be more naturally emergent, for example as part of play. If the communication goes from being directed one-way between curator and visitor, to becoming a two-way communication between visitors, new potentials can be actualised. It allows for experiences where the social dynamics between the participants play a crucial role in the affective engagement as well as in the sense-making process. Knowledge of one another's background and preferences can be used to trigger specific memories, fantasies or reflections. As in a dance, the roles of following and leading (guiding or receiving) can be explored and chosen according to one's disposition or mood. As a result, a form of collaborative emergence [44] can be achieved fostering a rich dialogue between the participants, the exhibited objects and the surrounding environment.

NEVER LET ME GO

The work presented here was motivated by the challenge of designing a generic mobile app which could be used in any large to mid-size art museum, gallery or sculpture park. The focus was to create a web app that would be easy to pick up and use regardless of the specific artworks on display.

'Never let me go' was designed as a two-player experience. It let the players take the roles of an Avatar and a Controller. The Controller was given the tools to spontaneously create an experience for the Avatar, in real time in the museum. The prototype was designed as two connected web apps where only the Controller app had an interface. This interface consisted of a menu with different commands, questions or instructions that could be sent to the Avatar (Figure 2), who would receive them as pre-recorded voice messages.

The decision to use voice recordings was inspired by work done in performance art and theatre (as described in the previous paragraph). In the design of 'Never let me go' the idea was to use the same performative techniques but to put them into a playful context with the purpose of facilitating social interactions. The Controller shared audio with the Avatar in order to keep track of how the experience was playing out. The shared audio was also used to emphasise intimacy and create a shared space where the two participants would feel safe together.

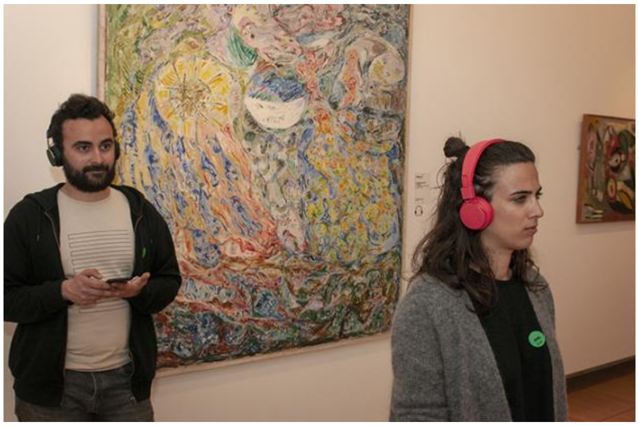


Figure 1. Showing a test session of 'Never let me go'.

In the Controller app, there were six different categories to choose from in the menu. The first was called 'Basic commands' and consisted of direct prompts such as "*Explore*", "*Follow*", and "*Wait*". The second was called 'Body' and consisted of instructions relating to the body of the Avatar, such as "*Close your eyes*", "*Breathe deeply*" or "*Mimic this with your body*". The third category consisted of personal questions that could be used in relation to the art, for example "*What part of your life is connected to this?*" and "*Who would you give this to?*". The fourth category was called 'Becomings' and consisted of prompts that were very open for interpretation. Examples were "*Become light*", "*Become sharp*" and "*Become part of this*". The fifth category was 'Feelings' which consisted of questions again to be related to the artworks, but this time in order to direct the Avatar's attention to the emotional content of an art piece. Examples were "*Can you feel the longing in this?*" or "*Can you sense the pain in this?*". Lastly, there was a category called 'Imagine that'. This consisted of instructions intended to trigger the Avatar's imagination. The idea was also to induce a sense of urgency in order to intensify the Avatar's experience. Examples of this category were "*Imagine that everything here is about to fall apart*" and "*Imagine that this is looking back at you*". Apart from the categories described, there were a 'Begin' and an 'End' option in the menu. These would trigger longer voice recordings of instructions, both for the Avatar and the Controller. In the case of the Avatar, the instructions included a suggestion that whenever in doubt about what to do, they should just relax and enjoy the art.

The content in the prototype was designed to be building blocks for experiences that could be either performance-like or closer to free play. It offered a structure with a clear beginning and an ending to set the frame for both players to act within. The intention was for players to use the content in an open-ended way. Therefore, a variety of content was implemented which could be interpreted differently depending on the situation. In this way, openness and ambiguity were used to give room for curiosity and exploration. This would also allow for users to express themselves and decide upon which tone to set for the experience. The idea was that this would enable both frivolous as well as serious encounters with the art and with each other. For the same reason, the voice recordings, although being performative in the use of tone, stress, and rhythm [4:295], were kept rather neutral. Brian Eno's ambient soundtrack: 'Music for Airports' was used as background music during half of the test sessions. The intention was to compare having silence with having relaxing music that wouldn't interfere with, or colour, the experience too much.

EVALUATION

The study presented here falls under the broad umbrella of Research through Design (RtD) [62] in which research findings emerge from reflections on practice. It is part of the so-called third wave of HCI, described by Susanne Bødker as related to "nonwork, non-purposeful, non-rational" interactions, concerned with culture, aesthetics, emotions, and a pragmatic approach to experience [7:1–2]. Because qualitative methods are useful in order to answer questions about experience, meaning and perspective from the standpoint of the participant [26], this approach was chosen for the study.

Trialling Never let me go

After the first version of the design was in place, three smaller user tests were carried out at different art museums in Copenhagen. The objective was to get feedback on the content and to find out whether it would work cross-institutionally. After a few more iterations, a larger trial was

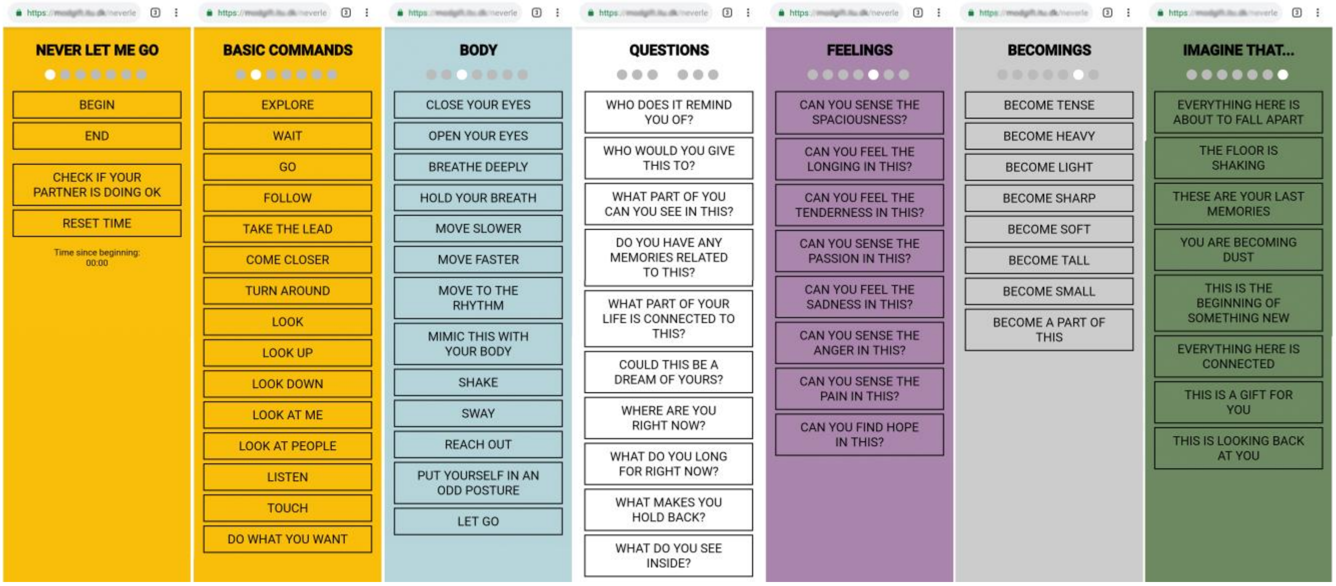

NEVER LET ME GO
BEGIN
END
CHECK IF YOUR PARTNER IS DOING OK
RESET TIME
Time since beginning: 00:00
BASIC COMMANDS
EXPLORE
WAIT
GO
FOLLOW
TAKE THE LEAD
COME CLOSER
TURN AROUND
LOOK
LOOK UP
LOOK DOWN
LOOK AT ME
LOOK AT PEOPLE
LISTEN
TOUCH
DO WHAT YOU WANT
BODY
CLOSE YOUR EYES
OPEN YOUR EYES
BREATHE DEEPLY
HOLD YOUR BREATH
MOVE SLOWER
MOVE FASTER
MOVE TO THE RHYTHM
MIMIC THIS WITH YOUR BODY
SHAKE
SWAY
REACH OUT
PUT YOURSELF IN AN ODD POSTURE
LET GO
QUESTIONS
WHO DOES IT REMIND YOU OF?
WHO WOULD YOU GIVE THIS TO?
WHAT PART OF YOU CAN YOU SEE IN THIS?
DO YOU HAVE ANY MEMORIES RELATED TO THIS?
WHAT PART OF YOUR LIFE IS CONNECTED TO THIS?
COULD THIS BE A DREAM OF YOURS?
WHERE ARE YOU RIGHT NOW?
WHAT DO YOU LONG FOR RIGHT NOW?
WHAT MAKES YOU HOLD BACK?
WHAT DO YOU SEE INSIDE?
FEELINGS
CAN YOU SENSE THE SPACIOUSNESS?
CAN YOU FEEL THE LONGING IN THIS?
CAN YOU FEEL THE TENDERNESS IN THIS?
CAN YOU SENSE THE PASSION IN THIS?
CAN YOU FEEL THE SADNESS IN THIS?
CAN YOU SENSE THE ANGER IN THIS?
CAN YOU SENSE THE PAIN IN THIS?
CAN YOU FIND HOPE IN THIS?
BECOMINGS
BECOME TENSE
BECOME HEAVY
BECOME LIGHT
BECOME SHARP
BECOME SOFT
BECOME TALL
BECOME SMALL
BECOME A PART OF THIS
IMAGINE THAT...
EVERYTHING HERE IS ABOUT TO FALL APART
THE FLOOR IS SHAKING
THESE ARE YOUR LAST MEMORIES
YOU ARE BECOMING DUST
THIS IS THE BEGINNING OF SOMETHING NEW
EVERYTHING HERE IS CONNECTED
THIS IS A GIFT FOR YOU
THIS IS LOOKING BACK AT YOU

Figure 2. Screenshots from the Controller app.

conducted between April 22 and May 2, 2019 at the National Gallery of Denmark.

20 people took part in the main trial. Of these 20, 14 were female; 6 were male; 8 were aged 23 – 30; 6 were aged 31 – 38; and 6 were aged 39 - 46. 6 out of the 10 pairs were romantic couples; 1 pair were siblings; 2 were friends and 1 pair had just met for the first time. All were recruited beforehand through public invitations on social media, and from a mailing list for people interested in cultural experiences in the Copenhagen area. In total, there were people of 13 different nationalities (mostly European) taking part in the study.

Each test was separated into 4 different sessions, approximately 10 minutes long. After a session ended, the participants would swap roles. Thus, they would try out both the Avatar role and the Controller role twice each. Before they started, they were given a mobile device each and a set of over-ear headphones. They could choose where in the museum to start the experience. Most often this would be in the modern art section. The Controllers were instructed to press ‘Begin’ when they felt ready to start.

During the test the participants were observed and photographed (with consent given beforehand) by a researcher, and afterwards semi-structured interviews were carried out with them in pairs. The interviews were recorded, transcribed and analysed through a process of inductive content analysis [17]. The themes that came out of the analysis were based on an iterative coding process where meaning units were identified, labelled, and put into categories. The observing researcher took notes continuously of what the participants were doing and at what time. These notes were also analyzed using codes such as: (1) laughing, (2) talking, (3) taking off headphones, (4) moving together, (5) moving separately, etc. Photographs were taken to supplement the notes and to contribute to the over-all impression of the trial.

RESULTS

The study reveals that the participants used ‘Never let me go’ for two main purposes: 1) to give and receive personal, introspective experiences in relation to the art and the museum space, and 2) to explore their relationship to each other through playing, teasing and pushing social boundaries. Below, the overall experience is first reported on, followed by the specific experiences of being an Avatar and a Controller.

The Overall Experience

Both from the observations and the interviews, it became clear that ‘Never let me go’ was an exercise in communication and interpretation. As P16 put it in the post-trial interview; *“Because you can't interact with the artwork. In this way, you interact with each other in the context of the artworks”.* When describing their experience, the participants would refer to a prompt being sent or received by saying “*I said*”, “*she said*” or “*he said*”. The fact that they had used someone else’s pre-recorded voice to communicate didn’t seem to matter. P20 compared it to having a “*secret language*” and P13 to “*telepathic communication*”. In most cases, the participants would not speak to each other directly at all during a session. Instead they used body language to communicate the things that they couldn’t say using the system. In a few cases, they would simply remove their headphones to talk, for example to answer a question that had been sent and received (P1, P2, P11, P12, P17, P18 did this). The silence, or the lack of ordinary conversation, seemed to be particularly enjoyable to some of the participants. As P13 says, *“Being able to communicate without having to come up with the things to say. Not having to talk. It was so relaxing. I really love* *that"*. And as P15 states, "*I prefer not talking, so it was very good for me. And I felt freer than I usually do*".

Connection and immersion

The experience was generally described as immersive and as being in a bubble together. P12 puts it this way: *"Being connected to another person that I'm close to. That made a very flexible dynamic bubble around us. So, everything felt a little bit safer. And other people were not important. Are they there? Are they looking? I don't know. I don't care*". P17 compares it to diving into water: "*I think it's a very immersive experience if I was to describe it. It's like if you dive and then you come up*". These feelings were strengthened when the background music was used, but even without music the participants felt connected. P8 puts it this way: *"I think without music we had more contact. Like I wanted to look at you more and see where you were. And I was more focused on you. Whilst with the music on, I was more in connection with the art and the environment"*. Most often, participants would follow each other around closely. But in some cases (P7, P8, P13, P14, P19, P20), the two participants would go their separate ways, converging and separating from time to time. *"It was a nice feeling to feel like we were hanging out even though we were in completely separate rooms",* as P13 puts it.

The Avatar Experience

Being the Avatar triggered feelings of anticipation. Players reported feeling both free and relaxed: "*I didn't think that the commands were very commanding. Maybe it's more like suggestions. It's quite a free situation*", says P7 for example. But at the same time, as avatars, players were waiting for something to happen. *"I remember enjoying being on my own, doing my stuff. But also, this tension and anticipation about waiting for commands and how that was actually very interesting",* as P8 describes it. And as P10 says, *"There was a sense of anticipation. I mean, I definitely think I was looking more into detail than usual"*. This somewhat passive, receiving quality of the Avatar role was frustrating to some people (especially P15 and P19). P19 explains, "*I realized that I'm very strong willed. So, I just want to go where I want to go and look. And now it was like oh I have to relate to what somebody is telling me to do"*. But most players enjoyed not having to make decisions for themselves as Avatars: "*I liked somebody else being in control. I'm in control of a lot of things when I'm at work and I was a little bit stressed before I came here. So, this was really nice*", P13 explains.

The social contract

All the players felt a strong obligation to follow the prompts they received. They relied on the social contract between each other, and felt guilty if they were not able to respond appropriately. P14 describes it this way: *"I forgot about the command once, and I was like 'Oh shit!' because I thought about it. Should I do it immediately, or? I mean, I thought about how to do it and how long. But I think for most of them I acted accordingly, in my interpretation of course. But yeah, I played along. I wanted to*". Nevertheless, on occasions Avatars would take the liberty to knowingly misinterpret a command, twisting the meaning somewhat and doing what was suggested but not in the expected context (P6, P9, P12, P17 talks about this). P6 gives this example: *"You came next to me and said: 'Come closer'. I knew, I was sure that you meant go closer to the painting, but I thought I'm not going to go closer to the painting. I'm going to go closer to her and make her uncomfortable. That was fun."*. This type of behaviour was part of how the players would often make jokes, play and tease one another. Being the Avatar seems to have been challenging at times in this regard. The physical prompts were often used by Controllers to push or tease their Avatars, leading to a few occasions of resistance. P3 describes it this way: "*It was mostly because it was awkward for me. For example, she would tell me to stretch or mimic. And I did it a few times but then I was feeling very awkward. So, I didn't*". P2 explains, "*If the room was empty then there is no limit. Then you can do something, as long as you don't disturb others*".

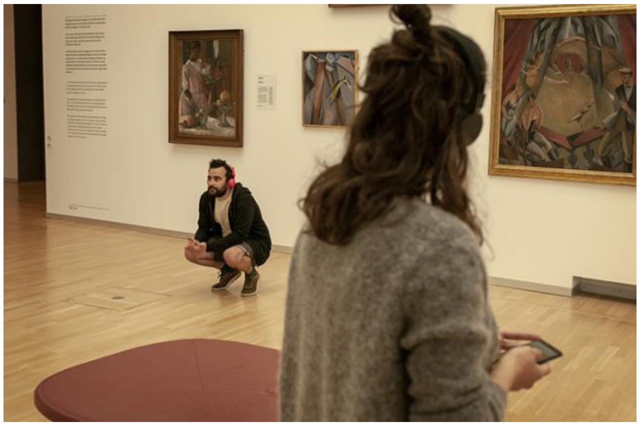


Figure 3. Avatar squatting down to view the art.

Introspection

What most participants enjoyed was how the different prompts, particularly the questions, would trigger introspective experiences. P12 here describes a situation where he was standing in front of a painting depicting a view over the ocean: *"So, when I got the question 'Where are you?'. I would have expected the answer to be like: I'm right here! But that wasn't my experience. I went to where does this painting actually take me. And it took me to a summer holiday trip where I remember I was standing at the beach and looking at the waves"*. Even abstract paintings could trigger this type of experience, as P5 describes: *"I really enjoyed those colours the blue and the green. And when the question was 'Can you see yourself in this?' I could see maybe the difficult moments in the spikes. I just let my imagination go into that abstract painting"*. This led to deeply personal moments which were sometimes shared verbally with the Controller.

The Controller Experience

Being a Controller was, not surprisingly, a very different experience from being an Avatar. This role was much less relaxing. As P16 explains, *"I felt a lot of responsibility. For the other person's safety, but also for the person's enjoyment of the experience, and also the artworks".* Taking on this role was interpreted as taking on the challenge to build meaningful and cohesive experiences for another person. As P7 puts it, "*Suddenly there is more responsibility or eyes on me. You were challenged to figure out something that would actually work, make sense or have an effect. So, it's like improvising and you have to get into it and then you get out of it".*

Prompt	**Times used**
Explore	53
Begin	45
End	41
Follow	38
Who does it remind you of?	36
Breathe deeply	35
Come closer	25
Close your eyes	25
Take the lead	25
Wait	24
Do what you want	23
Mimic this with your body	18
Go	18
Touch	17
Move faster	16

Table 1. The top 15 prompts used during the trial.

Sharing an experience

In order to make the best of it, most Controllers tried to be aware of the actions and whereabouts of the Avatar, at the same time as thinking of the artworks, the environment and what interpretations or experiences they offered. As P16 explains, *"As a controller I'm trying to interpret what the art is or gives me, in order to give that to the person who is looking at it".* One source of enjoyment in this task was about sharing your own experience or giving something to the Avatar. P8 puts it this way: "*I was trying to feel like it was a game where I was controlling the other player like an avatar. At the same time, I also wanted to see it as a way to share, like a feeling or a situation, wordlessly. You keep it separate and private, but you could still express: 'This is something I enjoy. I like to think about spaciousness here. And now I make you think about it too, and hopefully you will enjoy it as well'*".

The relationship matters

Knowing each other well seems to have helped in the process of deciding which prompts to send at what time. As P4 puts it, "*Because I knew how she would feel about the commands I was giving her and the paintings, I knew she would enjoy the pairing of them*". The element of trust was also important to the players. As P17 explains, "*I think it really makes a difference who you come with. Because we trust each other so much I think it was a deeper experience with some personal revelations and memories*".

Three different strategies

In general, there were three different approaches taken by the Controllers. Firstly, they would observe the Avatar closely, sending a prompt only when they thought they could add to or enhance the other person's experience in the form of a joke or to trigger introspection. As P7 puts it, "*I tried to sync with the situation, follow what was happening but still adding something*". This seems to have worked well for the Avatars, but on a few occasions the Controllers themselves felt frustrated when they didn't get any reply or indication of how their prompts had been received. As P11 puts it, "*I kind of wish that he would have said something, to know where he was at and to be able to build on top of that. But at the very beginning there was no feedback loop. So, I was just putting in coins into an arcade machine, and the arcade machine didn't say anything back to me*". Secondly, Controllers sought to dominate the experience by pulling their Avatars away from what they were doing. P18 explains it this way: "*I found it interesting that I could control her so much that I stopped her from reading the sign. She reads much faster than me and I don't enjoy that so much. In this case, I could make my experience into the dominant experience. So that's interesting. Might not be very productive in terms of the relationship though".* The domination strategy was also a way for Controllers to challenge their Avatars to physically act in ways they wouldn't normally choose to do. It was often used to tease and create funny situations that both the Avatar and the Controller could laugh about, but Controllers were also using it with more serious intentions. As P4 explains, *"I gave her some commands of becoming this or becoming that and stuff with her body, because I wanted her to overcome her boundaries and maybe to let go and try to do something that she feels is awkward".* The third Controller strategy was to let go of the control completely and instead send prompts at random, leaving it up to the Avatar to make sense of the situation. This only happened between P13 and P14 which is interesting considering that these two were professional game designers. P13 explains it this way: "*As a game designer you become self-aware of your heavy-handedness in planning an experience for somebody else. You learn not to trust yourself too much, and just let the player experience*".

DISCUSSION

What now follows is a discussion on the implications of this work for curators, designers and HCI researchers working in the museum sector. It starts out with a reflection on the significance of social and personal experiences in art museums. It then goes on to discuss the implications of giving people an alibi to play. Lastly, the advantages and disadvantages of improvised experience design are discussed.

Social and Personal Experiences in Art Museums

Most art museums struggle to make visitors engage more deeply with the art [50]. A common strategy is to offer guidance in order to instil a broader understanding of the artworks, their historical context and so forth. Using didactic exercises to inspire introspection in relation to the art, is not uncommon [8]. And as mentioned before, the role of emotions and affective engagement are currently gaining interest in the museum world. However, a prioritization of affective, introspective (or playful) experiences over more instructive or informative ones is sometimes still contested among curators [49].

Trialling ‘Never let me go’ showed that in certain situations players felt that the artwork became more of a background setting for their personal experience. On the other hand, they also reported engaging more deeply with the art than they normally would. P4 highlights the embodied part of this engagement by saying, *“I think it was a chance to connect with the art and not just be the observer, but to be part of the paintings and also the whole room”*. Using the app didn’t stop participants from reading labels and other informative texts about the artwork. Still, it is clear that what they most valued from the experience, was gaining a distinctly personal perspective on the art. The social interactions enabled by the app, enhanced their experience on the whole, but would also draw them away from the artwork. As P12 puts it, *“as an avatar you go a lot deeper into the experience of the museum and the art. As the controller, a little deeper into the experience of your significant other”.*

The bigger question is whether personal and social experiences that are less concerned with the art per se, but might enhance the overall visit (e.g. by leading to fun or empathy), have a place in an art museum. A more informative approach is valuable for many reasons, for example in assuring that artistic intentions are being sustained. Fostering practices that encourage visitors to pay less attention to the curatorial work is certainly controversial from a museum perspective. On the other hand, art museum visitors today are already being social, personal and playful. One example is the large percentage of visitors taking so called ‘arties’, in other words, selfies taken with the artworks [50]. Some museums have chosen to accept this behaviour and even encourage it in the form of the ‘Museum Selfie Day’ [16]. Other museums persist in banning any photography. The implications of these decisions will, no doubt, have an effect on the general development of museums in the future.

Allowing for Play

Participants would often use ‘Never let me go’ to play and make internal jokes, using the artworks as props in their personal narratives. As P12 puts it, *“if I can't connect emotionally with the art, then I can have fun with it”.* There may be ethical implications in supporting this kind of playful behaviour in an art museum. Play is often defined as uncertain and unproductive [9,35]. It can be used for educational purposes [30], but it is in essence an appropriative behaviour [31]. Taking over spaces and pushing social boundaries are part of play and therefore, as Sicart argues, it exists in tension between creation and destruction. It can be mocking and trivializing or it can make things deadly serious [47]. Allowing for play means losing a certain amount of control over visitors. ‘Never let me go’ gave participants an alibi to do things they wouldn’t normally do when visiting an art museum. They laughed, put themselves in awkward bodily postures, followed strangers, hid from each other, and went looking for things they could touch. Many of the players reported feeling a sense of freedom; however, they also described how they were being completely aware at all times of both the social and legal boundaries of the museum. They would push each other to do things, but always making sure not to disturb other visitors or to get into trouble with the guards. In this sense, it became clear that the players knew exactly where the lines were between acceptable and non-acceptable behaviour. One could therefore argue that, when it comes to the average adult art museum visitor, encouraging playful behaviour is not putting the museum at risk (in terms of inappropriate behaviour, vandalism etc.). Instead, it enables visitors to find new, more embodied, perhaps unexpected, ways to encounter the art.

Impromptu Experience Design

What makes ‘Never let me go’ different from other similar projects which explore the creation of personal interactions in a museum context (e.g. [21,51]) is the strategy of using, what is here referred to as ‘impromptu experience design’. This means that users cannot plan ahead, but have to act on the spur of the moment. This strategy offers some clear benefits, as well as, some challenges. First of all, with spontaneous and improvised creation there is no need for preparation, leaving out the potentially off-putting notion of having to do work before the experience can be consumed. The challenge, of course, being the loss of control and the difficulty then of making an experience that is perceived as meaningful and cohesive (a designed experience rather than a random one). In the case of ‘Never let me go’, this left some Controllers feeling thrilled and others quite stressed. As P16 puts it, *“It's a lot of responsibility, I think, to be in charge of the other person’s experience. I want to have everything prepared. I want you to start here and then I want you to go here, because I want to give you this specific experience, and not this emerging experience”.*

Serendipity

Another advantage of the impromptu approach is the possibility for creators to adapt to and use whatever is happening in the present moment. This is vital for play to happen. When it works at its best, though, it can also lead to emotional experiences where the conditions seem to fall perfectly into place in a surprising, almost magical, way. This is what can be called *serendipity* [38]. Players of 'Never let me go' reported several occasions where this happened. P11 expresses it in this way: "*The command helped me connect with what I was seeing, with the title and with the feeling of the artwork at the same time. It was like I was adding a piece of the puzzle. I think that was a lucky coincidence though. It was like the missing piece to let the picture have its effect on me. And that was really nice. I actually didn't experience that before. Ever*".

The importance of timing

An important key to getting it right, in general, was timing. The users would often complain of the difficulty in getting the timing right. Sometimes this would lead to unintentional humour, as prompts intended for one artwork were being interpreted in relation to another. At other times, badly timed prompts would simply lead to confusion. One problem with getting the timing right was related to the app's interface, which, according to users, was easy to understand but lacked in efficiency. This points to the need for further work in relation to interfaces for impromptu experience design. Models and inspiration could come from interface design for video games, where efficient real time control is often a key aspect of the entertainment value. Using techniques from the field of Adaptive User Interfaces (AUI) could also provide solutions on how to make the interface more efficient and enjoyable [1]. Even gamification techniques could perhaps be implemented for a smoother learning curve [24].

CONCLUSION

What has been described here is an exploration of both social and introspective aspects of an art museum visit. The attempt was to combine these two, essentially different, dynamics into something that would feel meaningful for friends or partners visiting the museum together. The results show that both introspective experiences and social play could be facilitated by users spontaneously prompting each other to reflect, sense and act in specific ways whilst exploring the art. Instead of having curators or artists orchestrating or guiding the encounters with the art, more control could potentially be given to the visitors. In this case, enabling introspection and social play led to deeply personal and embodied art experiences, even moments of serendipity, as well as lots of laughter and fun. This opens up for wider discussions about the future role of museums as well as the ethical implications of playing with cultural heritage. More concretely, the results point to the need for further research into how to design tools for non-designers to create meaningful impromptu experiences for each other.

ACKNOWLEDGMENTS

The author thanks the National Gallery of Denmark, the anonymous participants, and my GIFT project colleagues, friends, and reviewers for their helpful comments. A special thank you to Halfdan Hauch Jensen at the ITU AIR lab for all the help. The work is supported by the European Union's Horizon 2020 research and innovation programme under Grant No.: 727040. Photos by Johan Peter Jønsson.

REFERENCES

[1] Victor Alvarez-Cortes, Víctor H. Zárate, Jorge A. Ramírez Uresti, and Benjamin E. Zayas. 2009. Current Challenges and Applications for Adaptive User Interfaces. In I. Maurtua, ed., *Human-Computer Interaction*. IntechOpen. Retrieved August 30, 2019 from https://www.intechopen.com/books/human-computer-interaction/current-challenges-and-applications-for-adaptive-user-interfaces

[2] Michael J. Apter. 1991. A structural-phenomenology of play. In M.J. Apter and J.H. Kerr, eds., *Adult Play:A Reversal Theory Approach*. Swets & Zeitlinger, Amsterdam.

[3] Liliana Ardissono, Tsvi Kuflik, and Daniela Petrelli. 2012. Personalization in cultural heritage: the road travelled and the one ahead. *User Modeling and User-Adapted Interaction* 22, 1–2: 73–99.

[4] Richard Bauman. 1975. Verbal Art as Performance. *American Anthropologist* 77, 290–311.

[5] Steve Benford, Gabriella Giannachi, Boriana Koleva, and Tom Rodden. 2009. From Interaction to Trajectories: Designing Coherent Journeys Through User Experiences. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 709–718.

[6] Linda M. Blud. 1990. Social interaction and learning among family groups visiting a museum. *Museum Management and Curatorship* 9, 1: 43–51.

[7] Susanne Bødker. 2006. When second wave HCI meets third wave challenges. *Changing roles*, ACM Press, 1–8.

[8] Rika Burnham and Elliott Kai-Kee. 2005. The Art of Teaching in the Museum. *The Journal of Aesthetic Education* 39, 1: 65–76.

[9] Roger Caillois. 2001. *Man, Play and Games*. University of Illinois Press.

[10] Janet Cardiff. 2005. *Words Drawn in Water*. Retrieved August 30, 2019 from https://www.cardiffmiller.com/artworks/walks/wordsdrawn.html

[11] Luigina Ciolfi, Liam J. Bannon, and Mikael Fernström. 2008. Including Visitor Contributions in Cultural Heritage Installations: Designing for Participation.

Museum Management and Curatorship 23, 4: 353–365.

[12] Tanguy Coenen, Lien Mostmans, and Kris Naessens. 2013. MuseUs: Case Study of a Pervasive Cultural Heritage Serious Game. *ACM Journal on Computing and Cultural Heritage (JOCCH)* 6, 2. https://doi.org/10.1145/2460376.2460379

[13] Dan Cosley, Jonathan Baxter, Soyoung Lee, et al. 2009. A Tag in the Hand: Supporting Semantic, Social, and Spatial Navigation in Museums. *SIGCHI Conference on Human Factors in Computing Systems*, ACM, 1953-1962.

[14] Dan Cosley, Joel Lewenstein, Andrew Herman, et al. 2008. ArtLinks: Fostering Social Awareness and Reflection in Museums. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 403–412.

[15] Mihaly Csikszentmihalyi. 1975. *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*. Jossey-Bass, San Francisco, CA.

[16] Mar Dixon. 2018. MuseumSelfieDay. *Twitter*. Retrieved September 9, 2019 from https://twitter.com/MuseumSelfieDay.

[17] Satu Elo and Helvi Kyngäs. 2008. The qualitative content analysis process. *J Adv Nurs* 62, 1: 107–115.

[18] John H. Falk and Lynn Diane Dierking. 2012. *The Museum Experience Revisited*. Routledge, London, England.

[19] Erika Fischer-Lichte. 2008. *The Transformative Power of Performance*. Taylor And Francis.

[20] Martin Forsberg and Jenny Nordberg. *Doppelgänger*. Retrieved August 30, 2019 from http://jenny-nordberg.com/node/40

[21] Lesley Fosh, Steve Benford, Stuart Reeves, and Boriana Koleva. 2014. Gifting Personal Interpretations in Galleries. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 625–634.

[22] Lesley Fosh, Steve Benford, Stuart Reeves, Boriana Koleva, and Patrick Brundell. 2013. 'See Me, Feel Me, Touch Me, Hear Me': Trajectories and Interpretation in a Sculpture Garden. *CHI 2013: Changing Perspectives*, ACM, 149–158.

[23] William W. Gaver, John Bowers, Andrew Boucher, et al. 2004. The Drift Table: Designing for Ludic Engagement. *CHI '04 Extended Abstracts on Human Factors in Computing Systems*, ACM, 885–900.

[24] Carina González, Alberto Mora, and Pedro Toledo. 2014. Gamification in intelligent tutoring systems. *Second International Conference on Technological Ecosystems for Enhancing Multiculturality*, ACM, 221–225.

[25] Rebecca E. Grinter, Paul M. Aoki, Margaret H. Szymanski, James D. Thornton, Allison Woodruff, and Amy Hurst. 2002. Revisiting the Visit: Understanding How Technology Can Shape the Museum Visit. *Proceedings of the 2002 ACM Conference on Computer Supported Cooperative Work*, ACM Press, 146–155.

[26] Karin Hammarberg, Maggie Kirkman, and Sheryl de Lacey. 2016. Qualitative research methods: when touse them and how to judge them. *Human Reproduction* 31, 498–501.

[27] Marek Hatala and Ron Wakkary. 2005. Ontology-based user modelling in an augmented audio reality system for museums. *UMUAI* 15, 3–4: 339–380.

[28] Adrian Hazzard, Steve Benford, and Gary Burnett. 2015. Sculpting a mobile music soundtrack. *SIGCHI Conference on Human Factors in Computing Systems*, 387–396.

[29] Christian Heath and Dirk Vom Lehn. 2004. Configuring reception. (Dis-)regarding the 'spectator' in museums and galleries. *Theory, Culture & Society* 21, 6: 43 – 65.

[30] George E. Hein. 1998. *Learning in the Museum*. Routledge, New York.

[31] Thomas S. Henricks. 2015. *Play and the Human Condition*. University of Illinois Press.

[32] Janna Holmstedt. 2012. *Limit-cruisers (#1 Sphere)*. Retrieved August 30, 2019 from http://www.jannaholmstedt.com/works/limitcruisers_weld.html

[33] Eilean Hooper-Greenhill. 1992. *Museums and the Shaping of Knowledge*. Routledge.

[34] Eilean Hooper-Greenhill. 2006. Studying visitors. In S. MacDonald, ed., *A Companion to Museum Studies*. Blackwell, Oxford, 362–376.

[35] Johan Huizinga. 1998. *Homo Ludens: a study of the play-element in culture*. Routledge, London.

[36] Stefan Kaegi and Jörg Karrenbauer. *Remote X*. Retrieved August 30, 2019 from https://www.rimini-protokoll.de/website/en/project/remote-x

[37] Tsvi Kuflik, Oliviero Stock, Massimo Zancanaro, et al. 2011. A Visitor's Guide in an Active Museum: Presentations, Communications, and Reflection. *Journal on Computing and Cultural Heritage (JOCCH)* 3, 3: 1–25.

[38] S Makri and A Blandford. 2011. What is serendipity? – A workshop report. *Information Research* 16, 3. Retrieved August 30, 2019 from http://www.informationr.net/ir/16-3/paper491.html

[39] D. Mulcahy. 2016. "Sticky" learning: Assembling bodies, objects and affects at the museum and beyond. In J. Coffey, S. Budgeon, and H. Cahill, eds., *Learning*

Bodies: The Body in Youth and Childhood Studies. Springer, Singapore, 207–222.

[40] Jan Packer. 2008. Beyond learning: Exploring visitors' perceptions of the value and benefits of museum experiences. *Curator* 51, 33–54.

[41] Andrew Pekarik, Zahava D. Doering, and David A. Karns. 1999. Exploring Satisfying Experiences in Museums. *Curator: The Museum Journal* 42, 2: 152–173.

[42] Daniela Petrelli and Elena Not. 2005. User-centred design of flexible hypermedia for a mobile guide: reflections on the hyperaudio experience. *User Modeling and User-Adapted Interaction* 15, 3–4: 303-338.

[43] Katie Salen and Eric Zimmerman. 2004. *Rules of play: Game design fundamentals*. MIT press.

[44] Keith R. Sawyer. 1999. The emergence of creativity. *Philosophical Psychology* 12, 447–469.

[45] Keith R. Sawyer. 2002. Unresolved tensions in sociocultural theory: analogies with contemporary sociological debates. *Culture & Psychology* 8, 3: 283–305.

[46] Richard Schechner. 1988. Playing. *Play & Culture* 1, 1: 3–19.

[47] Miguel Sicart. 2014. *Play Matters*. MIT Press.

[48] Lois H. Silverman. 1995. Visitor Meaning-Making in Museums for a New Age. *Curator: The Museum Journal* 38, 3: 161–170.

[49] Laurajane Smith, Margret Wetherell, and Gary Campbell, eds. 2018. *Emotion, Affective Practices, and the Past in the Present*. Routledge.

[50] Lisa F. Smith, Jeffrey K. Smith, and Pablo P. L. Tinio. 2017. Time Spent Viewing Art and Reading Labels. *Psychology of Aesthetics Creativity and the Arts* 11, 1: 77–85.

[51] Jocelyn Spence, Benjamin Bedwell, Michelle Coleman, et al. 2019. Seeing with New Eyes: Designing for In-the-Wild Museum Gifting. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2019),* ACM 1-13.

[52] Jakko Stenros. 2012. In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play. *2012 International DiGRA Nordic Conference*, 1–19.

[53] Oliviero Stock, Massimo Zancanaro, Paolo Busetta, et al. 2007. Adaptive, intelligent presentation of information for the museum visitor in PEACH. *User Modeling and User-Adapted Interaction* 17, 3: 257–304.

[54] Robyn Taylor, John Bowers, Bettina Nissen, et al. 2015. Making Magic: Designing for Open Interactions in Museum Settings. *Proceedings of the 2015 ACM SIGCHI Conference on Creativity and Cognition*, 313–322.

[55] Peter Tolmie, Steve Benford, Chris Greenhalgh, Tom Rodden, and Stuart Reeves. 2014. Supporting Group Interactions in Museum Visiting. *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing,* ACM, 1049–1059.

[56] Maria Vayanou, Yannis Ioannidis, George Loumos, and Antonis Kargas. 2019. How to play storytelling games with masterpieces: from art galleries to hybrid board games. *Journal of Computers in Education* 6, 1: 79–116.

[57] Vassilios Vlahakis, Thomas Pliakas, Athanasios M. Demiris, and Nikolaos Ioannidis. 2003. Design and Application of an Augmented Reality System for continuous, context-sensitive guided tours of indoor and outdoor cultural sites and museums. *VAST*, 155–164.

[58] Ron Wakkary and Marek Hatala. 2007. Situated play in a tangible interface and adaptive audio museum guide. *Personal and Ubiquitous Computing* 11, 3: 171–191.

[59] James V. Wertsch. 1989. A Sociocultural Approach To Mind: Some Theoretical Considerations. *Cultural Dynamics* 2, 2: 140–161.

[60] D Worts. 1992. Visitor-centered experiences. In A. Benefield, S. Bitgood, and H. Shettel, eds., *Visitor studies: theory, research, and practice, volume 4*. Center for Social Design, Jacksonville, Ala, 156–161.

[61] Nikoleta Yiannoutsou, Ioanna Papadimitriou, Vassilis Komis, and Nikolaos Avouris. 2009. "Playing with" Museum Exhibits: Designing Educational Games Mediated by Mobile Technology. *IDC 2009 – Short Papers*, 230–233.

[62] John Zimmerman, Jodi Forlizzi, and Shelley Evenson. 2007. Research Through Design as a Method for Interaction Design Research in HCI. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 493–502.

[63] 2001. Can You See Me Now? *Blast Theory*. Retrieved August 30, 2019 from http://www.blasttheory.co.uk/projects/can-you-see-me-now/

[64] *The SFMOMA Audio App*. SFMOMA.

Paper 4:

Interpersonalizing Intimate Museum Experiences

Ryding, K., Spence, J., Løvlie, A. S. & Benford, S.

Published in:
International Journal of Human-Computer Interaction (IJHCI). 1-22.

International Journal of Human–Computer Interaction

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/hihc20

Interpersonalizing Intimate Museum Experiences

Karin Ryding , Jocelyn Spence , Anders Sundnes Løvlie & Steve Benford

To cite this article: Karin Ryding , Jocelyn Spence , Anders Sundnes Løvlie & Steve Benford (2021): Interpersonalizing Intimate Museum Experiences, International Journal of Human–Computer Interaction, DOI: 10.1080/10447318.2020.1870829

To link to this article: https://doi.org/10.1080/10447318.2020.1870829

Published online: 01 Feb 2021.

Submit your article to this journal

Article views: 30

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=hihc20

INTERNATIONAL JOURNAL OF HUMAN–COMPUTER INTERACTION
https://doi.org/10.1080/10447318.2020.1870829

Taylor & Francis
Taylor & Francis Group

Check for updates

Interpersonalizing Intimate Museum Experiences

Karin Ryding[a], Jocelyn Spence[b], Anders Sundnes Løvlie[a], and Steve Benford[b]

[a]Digital Design Department, IT University of Copenhagen, Copenhagen, Denmark; [b]Mixed Reality Lab, The University of Nottingham, Nottingham, UK

ABSTRACT
We reflect on two museum visiting experiences that adopted the strategy of interpersonalization in which one visitor creates an experience for another. In the *Gift* app, visitors create personal mini-tours for specific others. In *Never let me go*, one visitor controls the experience of another by sending them remote instructions as they follow them around the museum. By reflecting on the design of these experiences and their deployment in museums we show how interpersonalization can deliver engaging social visits in which visitors make their own interpretations. We contrast the approach to previous research in customization and algorithmic personalization. We reveal how these experiences relied on intimacy between pairs of visitors but also between visitors and the museum. We propose that interpersonalization requires museums to step-back to make space for interpretation, but that this then raises the challenge of how to reintroduce the museum's own perspective. Finally, we articulate strategies and challenges for applying this approach.

1. Introduction

A powerful aspect of digital technologies is their ability to personalize the user experience, for example, by capturing data about people's preferences and behaviors, developing algorithms to profile them, and then adapting their interactions accordingly. Personalization has been applied across a wide variety of domains including information retrieval and hypermedia (Steichen et al., 2012), social media (Abdel-Hafez & Xu, 2013), online learning (Sunar et al., 2016), games (Karpinskyj et al., 2014) and museum visiting (Kontiza et al., 2018; Kuflik et al., 2011; Jonathan Lee & Paddon, 2017; van Tuijn et al., 2016) which is the focus of this paper. In turn, HCI has long been concerned with how users set about customizing their own experiences for themselves, from software productivity tools (Mackay, 1991) to games (Dyck et al., 2003) and many examples of hybrid physical-digital experiences (Ames et al., 2014; Benford et al., 2018; Cheatle & Jackson, 2015; Rosner & Ryokai, 2009; Tsaknaki et al., 2014).

In this article we explore a novel approach to personalization called *interpersonalization* (Eklund, 2020) in which one human personalizes the experience of another. We explore this idea in the context of museum visiting, considering how it can help museums respond to the need to diversify audiences, deliver meaningful experiences to individuals and incorporate digital technologies into hybrid experiences (Falk & Dierking, 2012; Parry, 2010; Simon, 2010). We introduce two different ways in which one visitor can personalize the experience of another, based upon two distinct aspects of social interaction. The first, an embodied experience scaffolded by the *Gift* app, builds upon the powerful social transaction of gifting and involves one visitor making an individual mini-tour as a gift for another. The second, called *Never let me go*, draws on social play with one visitor vicariously controlling the experience of another as they follow them around the museum. We report on a Research Through Design process (Zimmerman et al., 2007) with a significant element of Research in the Wild (Rogers & Marshall, 2017) in which we trialed and studied these two different experiences with the public in museums.

We reflect across these examples and draw out three key themes. First, we describe interpersonalization as a format of interaction, noting that the personal relationship between the visitors brings them a new perspective on the museum exhibits, helping them see new meaning and relevance in the artifacts in light of their personal connection. Second, we suggest that our designs rely on establishing intimacy, both between the visitors but also in terms of visitors' relationships to the museum and its exhibits. Finally, we discuss how the museum can consider its own role in such experiences, especially stepping back to make space for visitors' own interpretations (Sengers & Gaver, 2006).

We suggest that these kinds of interpersonalized and intimate visiting experiences can bring value to museums as they represent an approach to creating new museum experiences that is both powerful, drawing on the strength of the visitors' personal relations, but also lightweight with regard to required technical infrastructure, both of our examples being deployed as public web apps. Moreover, our findings suggest that they may lead to new possibilities for inspiring visitors to share their own interpretations of museum content, which may be valuable for facilitating increased visitor engagement.

CONTACT Anders Sundnes Løvlie asun@itu.dk Digital Design Department, IT University of Copenhagen, Copenhagen, Denmark, UK.

© 2021 Taylor & Francis Group, LLC

With a wider perspective, we argue that interpersonalization may speak to how we understand personalization of experiences elsewhere. Interpersonalization is focused on the interpersonal relation, and as such is qualitatively different from personalization/customization when understood as adapting to individual users – "individualization" (Bowen & Filippini-Fantoni, 2004). At the same time, these experiences are also distinct from the large scale, public sharing of experiences that (typically) takes place on social media. Placed on a level between the individual and the (massively) social, but simultaneously engaging with the museum as a site of public learning and discovery, they offer one-on-one experiences that blend qualities of the intimate with those of the public.

2. Related work

Our consideration of related work spans two core themes of our paper, interpersonalization and intimacy, with particular attention to the relevance of each to both HCI and interactive museum experiences.

2.1. Interpersonalization

The suppliers of products, including goods, services and interactive experiences, have long been concerned with how to differentiate them, that is how to adapt them to different consumers so as to add value. There have been two broad strategies for achieving this.

The first, *customization*, is typically viewed as a human-driven, manual process in which either the supplier or consumer (or perhaps both) adapt the product (Jay Lee et al., 2015). HCI has previously considered how users customize various digital products for themselves, including workplace productivity tools (Mackay, 1991), computer games (Dyck et al., 2003) and crafting and making, which typically involve elements of both physical and digital customization (Ames et al., 2014; Benford et al., 2018; Cheatle & Jackson, 2015; Rosner & Ryokai, 2009; Tsaknaki et al., 2014). Others have described how users come to appropriate technologies for their own purposes during the course of practice (Dourish, 2001) so as to support situatedness, dynamics and ownership (Dix, 2007) and discussed how processes of appropriation, non-appropriation and disappropriation may result in technologies being designed, in-use and ultimately rejected (Carroll et al., 2001).

The second strategy, *personalization*, refers to a largely automated process in which algorithms draw on personal data to adapt products for consumers (Arora et al., 2008; Sundar & Marathe, 2010). Algorithmic personalization has also been widely applied to digital technologies, including to information retrieval and hypermedia (Steichen et al., 2012), social media (Abdel-Hafez & Xu, 2013), online learning (Sunar et al., 2016) and games (Karpinskyj et al., 2014). In discussing personalized information retrieval, Ghorab et al. (2013) distinguish between approaches that are individualized (operate at the levels of the individual), community-based (operate at the level of a group), or aggregate (operate for the whole population, but based upon analysis of many individual's data). Bowen and Filippini-Fantoni note how both personalization and customization may draw on explicitly generated user data (e.g., through questionnaires and registration forms), but that personalization also utilizes implicit information (e.g., through cookies and log files) (Bowen & Filippini-Fantoni, 2004). Thus, even if customization is seen as being largely manual, it may still be underpinned by digital platforms and personal data.

An alternative strategy is to encourage humans to differentiate experiences for each other, although again potentially with support from digital platforms. This more social approach to differentiation has been referred to as *interpersonalization* by Eklund (2020), who first called attention to it as a result of her ethnographic studies of museum visiting which revealed the importance of social meaning-making among visitors. Eklund calls for a shift from "designing personalized toward interpersonal experiences" and raises four design sensitivities that need to be considered: interpersonalized meaning-making, playful sociality, social information sharing, and social movement. While the approach could be seen as being as much about customization as personalization, the term would appear to capture the essential social dynamic of getting one person to differentiate an experience for another, and so we adopt it here in directly responding to her call[1].

Ekund's (and indeed, our own) interest in museums as a site for interpersonalization is not accidental. The modern museum faces many challenges including widening the audience demographic to include younger audiences, reaching out to those who have traditionally been excluded or have not seen museums as being relevant to their lives, and opening up to new voices and narratives as they struggle to deal with the legacy of colonialism. Many have been turning to digital technologies as a potential solution as they are perceived to be popular with younger demographics, associated with the wider world of social media, gaming and digital entertainment, and can be used to present multiple narratives around events. There has also been a growing awareness within the museum sector of the need to offer differentiated experiences to different audiences (Falk, 2009; Falk & Dierking, 2012) and the adoption of digital technologies brings with it the potential for achieving this through the above strategies of customization, personalization and now interpersonalization. A notable example of a customizable museum experience is the "Pen" device offered to visitors at the Cooper Hewitt, Smithsonian Design Museum, which allows visitors to digitally "collect" exhibits they encounter and engage in various co-creation and co-curation activities (Chan & Cope, 2015). The personalization of museum experiences has received widespread attention since the 1990s (Bowen & Filippini-Fantoni, 2004; Lynch, 2000; Oberlander et al., 1998; Paterno & Mancini, 1999; Stock et al., 1993) including projects that have explored how to design personalized experiences and exhibitions in museum contexts (Kontiza et al., 2018; Kuflik et al., 2011; Jonathan Lee & Paddon, 2017; van Tuijn et al., 2016). As documented by Ardissono et al. (2012), early work on personalization in cultural heritage has focused largely on systems that adapt to individual users through user modeling aimed at matching users with relevant content. Continued interest in this area is demonstrated by the PATCH workshop series on Personalized Access to Cultural Heritage, currently in its 11th iteration. Recent research has continued to focus on issues such as user modeling and recommender systems (Almeshari et al., 2019; De Angelis et al., 2017; Castagnos et al., 2019; Dahroug et al., 2019; Deladiennee & Naudet, 2017; Fishwick, 2016; Katifori et al., 2019; Mauro, 2019; Mokatren et al., 2019; Sansonetti et al., 2019).

However, the personalization of museum experiences is not always easy. Not and Petrelli (2019) suggest that a major obstacle to large-scale adoption of personalization in cultural heritage is the complexity of the technical systems, requiring technical expertise that is out of reach for most cultural heritage professionals with the implication that successful approaches may need to be technically lightweight. While personalization tends to be approached as a challenge of matching users with relevant content, it can also be considered as the challenge of *making an experience feel more personal*, or developing a personal connection between the visitor and the museum. Not et al. (2017) approach this challenge through a system for personalized text generation that creates personalized postcards summarizing the visit to the museum. Museums have also explored personalized storytelling (Katifori et al., 2014; Vayanou et al., 2014) and play (Vayanou et al., 2019). Marshall et al. (2015) report on an experiment in which museum objects were given personalities and made to "compete" for display based on which object could capture visitors' interest the most through both physical presence as well as interactions on Twitter. In the museum context it is also important to note that museum visits tend to be a social activity, and approaches to personalization therefore need to address the social context of the visit (Fosh et al., 2016, 2014, 2015; Lykourentzou et al., 2013; McManus, 1989).

In what follows, we explore a novel approach to the challenges of differentiating museum experiences, one that differs from both the conventional customization of websites and visits and also from automated personalization based on visitor profiles. We turn to the idea of interpersonalization and explore what traction this might offer for creating new kinds of visiting experience that meet the needs of the contemporary museum. We present two designs in which a museum visitor is tasked with creating an experience for another museum visitor, offering them the opportunity to see the exhibition through another person's eyes as it were (Spence et al., 2019). These designs offer concrete responses to the idea of interpersonalization. On the one hand, the adaptation is done manually by a human user; on the other hand that person is adapting the experience for another person, carrying out a similar function to what a computational personalization system would do. However, the adaptation carried out by users in our two examples is qualitatively different from the personalization that can be done by a computer algorithm. A human user can employ their full range of intellectual, intuitive, emotional, social and expressive capabilities in order to create the most gratifying experience their imagination allows.

2.2. Intimacy

The second key theme that emerged from our paper is intimacy, which has also been considered by previous research in HCI. Generally, the word intimacy is associated with the private and emotional sphere of one's life. It is often used in relation to physical closeness or emotional investment in relationships, such as between romantic partners. However, more broadly, intimacy is used to describe a range of things happening at the local, micro-level, as well as on embodied levels, and on levels that involve the psyche in one way or another (Wilson, 2016, p. 249). For instance, the term is occasionally used to describe experiences that take place in the encounter between people and their (living or nonliving) surroundings, such as referring to art or nature experiences. In the light of this, Sadowski suggests that in the broadest sense of the term, intimacy describes "a context that is relational, and that this relation affects one's body and embodied self" (Sadowski, 2016, p. 46). According to her, "getting intimate with someone or something means crossing a boundary and connecting with the other, and being at risk of losing oneself to some degree" (Sadowski, 2016, p. 45).

Within HCI, it is sometimes acknowledged that the term is ambiguous, subjective and hard to define (e.g., Kaye et al., 2005). However, most often intimacy is used with reference to interpersonal relationships and research on interactive technologies to express, share and communicate already established intimate feelings (although there are exceptions such as the work done by Schiphorst et al. (2007)). The interest in computer-mediated intimacy goes back to before the turn of the millennium (Dodge, 1997). This and other early signs of interest in the topic are perhaps best represented in the 2003 Intimate Ubiquitous Computing workshop at Ubicomp (Bell et al., 2003). According to Gaver, technologies for mediating intimacy can be categorized into two groups: a) those which mediate intimate expressions and b) those which evoke intimate reactions (B. Gaver, 2002). In the first case, technologies are used to reproduce intimate action or situation (Counts & Fellheimer, 2004; Goodman & Misilim, 2003; Markopoulos et al., 2004; Mueller et al., 2005) and in the second, the technologies rely on materials and abstract representations as a way to elicit feelings of intimacy between family members, romantic partners, friends or even complete strangers (Chang et al., 2001; Gaver & Strong, 1996; Schiphorst et al., 2007; Tollmar et al., 2000). When it comes to design strategies, approaches that utilize the expressive, evocative and poetic capacities of electronic media are often argued for (Gaver & Strong, 1996; Grivas, 2006). For instance, Jayne Wallace has used digital art and jewelry to explore issues such as experiences of enchantment through the evocation of intimate rituals (McCarthy et al., 2006), how esthetic experiences including the digital connection to another place can lead to feelings of interpersonal closeness and intimacy (Wright et al., 2008), and how a sense of self, home and intimacy can be enabled for people living with dementia (Wallace et al., 2012). These design explorations emphasize a pragmatist esthetics of interaction (Wright et al., 2008) wherein the intellectual, sensual, and emotional are equally embraced. Moreover, it puts the relational and dialogical aspects of experience into focus, acknowledging how self, object, and setting are actively constructed and how the dialogue between them plays an important role in completing any form of designed experience.

However, contrary to the esthetically rich approaches employed by Wallace and others, it has also proven effective to build on the culturally and socially embedded nature of communication even in the case of extremely minimalist design. A study of "Minimal Intimate Objects", low-bandwidth devices for communicating intimacy for couples in long-distance relationships, revealed that "a single bit of communication can leverage an enormous amount of social, cultural and emotional capital, giving it a significance far greater than its bandwidth would seem to suggest" (Kaye, 2006, p. 367). Here, the constrained nature of the communication provided space for complex and evocative interpretations based on the partners' shared understandings of each other. Thus, the experience of intimacy relied on the richness of the relationship, rather than content or the visual appeal of the design.

Another form of intimacy to be found in the HCI literature concerns "vicarious" experiences, specifically applying digital technologies to give one person a close-up and intimate view of another's experience. A notable example involved the riders of amusement rides wearing a head-mounted video camera and microphone as well as heart rate and sweat sensors, with the captured data being broadcast to watching spectators who could tune in to an unusually close view of someone having an thrilling experience (Schnädelbach et al., 2008). The designer followed this up with a more intimate pairwise experience in which some family members watched from a distance as others explored a "horror maze" at a major theme park. These experiences proved to be intense and emotional, even at times challenging and uncomfortable. Indeed, creating an acceptable level of temporary discomfort was one of the key design strategies employed by the designer, an example of the more general concept of "uncomfortable interactions" in which intimacy, along with lack of control and visceral and cultural discomfort, is designed into experiences so as to make them entertaining, enlightening or socially bonding (Benford et al., 2012). Vicarious experiences have also been explored directly within the museum context, as for example, in the Sotto Voce tour guide that enabled visitors to eavesdrop on other visitors' tours (Aoki et al., 2002).

However, associations between intimacy and discomfort are not restricted to overtly scary or thrilling experiences, but can also be found in more everyday situations. Fosh et al.'s (2014) study of museum gifting involved the receiver experiencing their gifts in the presence of the giver, which led to reported moments of awkwardness and embarrassment when gifts had not been well judged, appeared to convey inappropriate sentiments, and/or were not acknowledged appropriately. A study of The Rough Mile, a locative experience designed to give and receive music tracks, included a broadly similar account of a gift backfiring (Spence et al., 2017). Indeed, everyday gifting is a socially important and complex phenomenon that consequently comes loaded with risks for losing face, both for the giver due to an ill-judged gift and the receiver arising from an ill-judged response (Sherry et al., 1993; Sunwolf, 2006). In short, while intimacy can deliver powerful experiences, it comes along with the risks of also creating awkward ones and so needs to be treated with caution as we explored in our two designs.

3. Methodology

The two case studies that we consider in this paper were two separate sub-projects undertaken in parallel within an overarching 3-year-long multi-partner European research project called GIFT (Back et al., 2018; Løvlie et al., 2019; Waern & Løvlie, in press). Both projects followed the approach of Research through Design, a design- and practice-led approach in which research findings emerge from reflections on the practical activities of designing and making. Reflection may involve critically appraising a portfolio of similar designs (Bowers, 2012; Gaver, 2012) to draw out common themes. Our approach also involves a significant element of Research in the Wild (Rogers & Marshall, 2017), as we examine two designs that were deployed in actual museums with public audiences under realistic conditions and studied what unfolded. Both designs also incorporated performative elements, with *Never let me go* harnessing the idea of one visitor controlling another's somewhat performative interactions in the public space of a museum, while the *Gift* app was designed by professional artists with a background in performance who were interested in bringing their artistic sensibility to the design of a mainstream visiting experience through the design of performative instructions as we discuss below. Consequently, our approach also incorporated elements of "performance-led research in the wild" (Benford et al., 2013), even though the two experiences were not overtly framed as performances.

Our reflections therefore encompass both the designers' and users' (visitors') perspectives, reaching out beyond the "design studio" to also consider the experience of real-world deployments in museums. The data-capture element of the *Gift* app relied on documentation of iterative designs, design meetings, and in-depth interviews with visitors during an initial prototype deployment at the Brighton Museum and Art Gallery in the UK in July 2018. 57 users completed an exit questionnaire and a further 57 undertook a full interview. Researchers also gathered data from usage of the final version released in 2019, which is available through https://gifting.digital/gift-experience/, as well as a small number of in-depth interviews. These indicate that the final version has not significantly altered the reactions received in 2018. All user names have been pseudonymized.

Never let me go was part of a PhD research project that involved designing and deploying several prototype experiences. Here insights from the design process were combined with data gathered from four prototype deployments. Early iterations of the app were tested at three different art museums in Copenhagen with 6 users in total. The main trial was conducted at the National Gallery of Denmark. In total, 20 people of 13 different nationalities (mostly European) took part in the trial. 6 out of the 10 pairs were romantic couples; 1 pair were siblings; 2 were friends and 1 pair had just met for the first time. During the trial the participants were observed and photographed (with consent given beforehand) by a researcher, and afterward in-depth interviews were carried out with them in pairs. The interviews (each between 30 and 40 minutes long) were recorded, transcribed and analyzed. The observing researcher took notes continuously of what the participants were doing and at what time. Photographs were taken to supplement the field notes and to contribute to the overall impression of the trial.

As our two case studies were part of a common research project, reflections and comparisons between them occurred informally throughout their development, with the wider project team regularly gathering together to share and compare results with a view to developing common guidelines, tools and platforms. However, findings from both were initially published independently. The design and study of the Gift app was reported in a paper at ACM CHI 2019 (Spence et al., 2019) that focused on the idea of how visitors came to see the museum's collection through "others' eyes" (see below). Although some elements of our findings in this article dovetail with our previously reported findings, we use this article to deepen and extend discussions of interpersonalization, intimacy, the role of museums in app usage, as well as opportunities and challenges with realizing such design strategies. The design and study of *Never let me go* was first reported in a paper for ACM CHI 2020 (Ryding, 2020), which focused on the design's combination of introspection and social play. Later, a paper with a more in-depth take on the relational aspects of the play design was published in ACM DIS 2020 (Ryding & Fritsch, 2020).

In this current article, we report for the first time new reflections across the two case studies that for the most part followed the end of the project, after there had been time to reappraise the work. This also involved revisiting the data captured from earlier studies and re-analyzing it in the light of new themes that had emerged over the course of a series of discussions and collaborative writing.

We now briefly introduce our two case studies in order to help orient the reader to the unusual kinds of visitor experience that we are considering here, before then introducing our three main themes: Interpersonalization, intimacy and interpretation.

4. The *gift* web app

The *Gift* web app is a primarily voice-driven, artistically crafted experience that enables museum visitors to create, give, and receive digital gifts from within the museum collections (see Figure 1, and supplementary video at https://vimeo.com/298647523/8679ad1d99). Visitors access the web app on a smartphone or a tablet, preferably using headphones. When

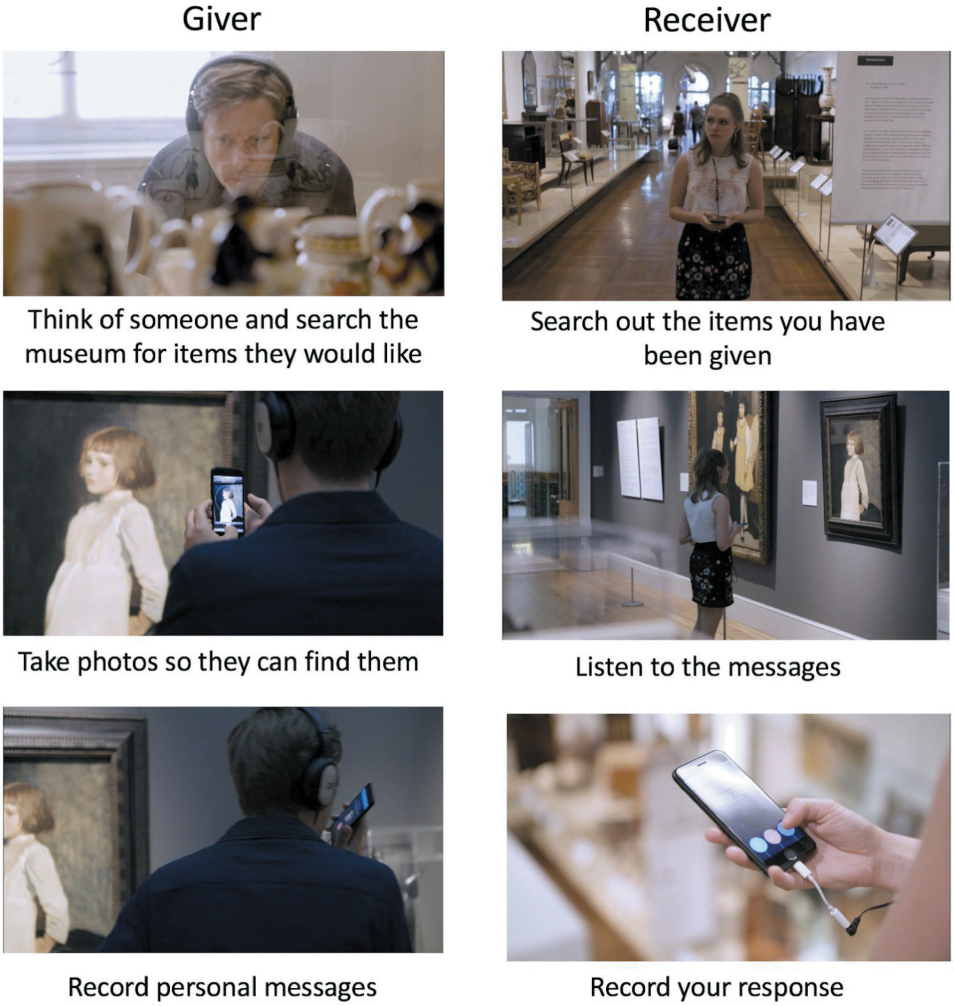

Giver
Receiver
Think of someone and search the museum for items they would like
Search out the items you have been given
Take photos so they can find them
Listen to the messages
Record personal messages
Record your response

Figure 1. Overview of the *Gift* app experience. Photos by Charlie Johnson.

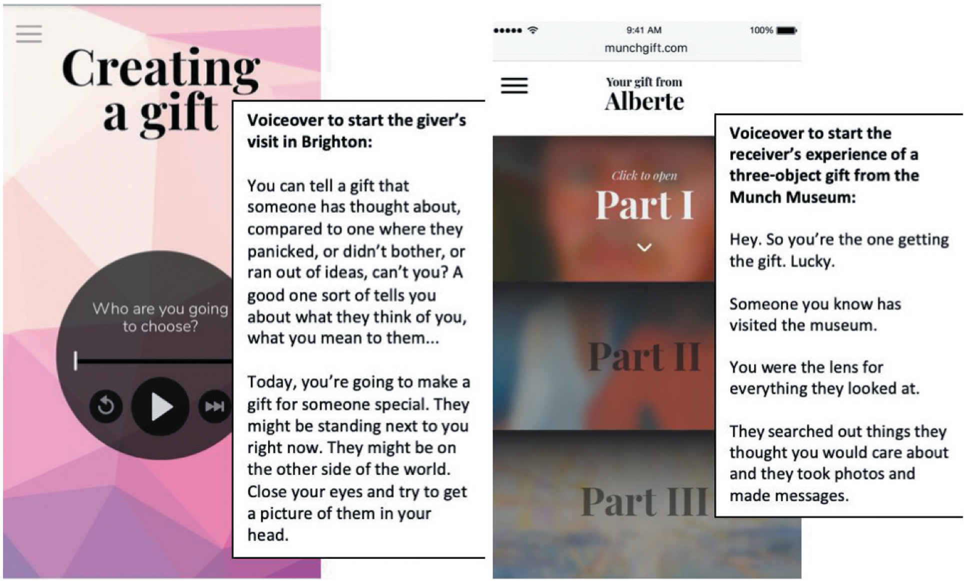
visitors enter the web app they are greeted by a female voice speaking gently in an intimate tone of voice and a style more evocative of a personal conversation between friends than anything one might expect to hear from a public institution:

> Today you're going to make a gift for someone special. They might be next to you right now. They might be on the other side of the world. Close your eyes and try to get a picture of them in your head.

The narration frames the experience in terms of thoughtfulness and care (Figure 2). The giver is prompted to take photos (where permitted) of the objects they wish to include in their gift, and record an audio message. If they feel uncomfortable speaking in front of the object, they can find a more discreet place (Figure 3). They may then repeat this process, if they wish, for a second and third object to be included in the gift. Once completed, the giver can send the gift to the receiver via a link embedded into a messaging service such as SMS, e-mail, WhatsApp or Messenger.

When receivers click the link to their gift, they are taken to the unique web page for their gift and hear the same narrator's voice orienting them to this unusual gift-receiving experience. If they receive their gift at the museum where it was made, they can follow clues input by the giver to locate the objects in the gift and listen to the recording while standing in front of the objects. If they cannot attend the museum in person they can still read the clue, see the photograph, and hear the message. In turn, they are asked to record a response for their giver. These gifts can feel like a personalized museum tour, a museum-style "mixtape", a collection of hybrid objects, or something else entirely, depending on the receiver's individual perspective. Text entry and visual interactions are kept to a minimum so that visitors can keep their visual attention on the museum and its objects, while their mental and/or emotional attention is directed at their friend.

The web app was created by Blast Theory based on foundational research by Lesley Fosh and colleagues into the approach of gifting personal interpretations, first between couples in art galleries (Fosh et al., 2014) and then among small groups of families and friends in museums (Fosh et al., 2016). These exploratory studies employed low-fi prototyping and observation to reveal how gifting might help tackle two key challenges faced by museum curators: encouraging visitors to make their own interpretations of the objects they encounter, and personalizing the visiting experience. Blast Theory extended this



Voiceover to start the giver's visit in Brighton:

You can tell a gift that someone has thought about, compared to one where they panicked, or didn't bother, or ran out of ideas, can't you? A good one sort of tells you about what they think of you, what you mean to them…

Today, you're going to make a gift for someone special. They might be standing next to you right now. They might be on the other side of the world. Close your eyes and try to get a picture of them in your head.

Voiceover to start the receiver's experience of a three-object gift from the Munch Museum:

Hey. So you're the one getting the gift. Lucky.

Someone you know has visited the museum.

You were the lens for everything they looked at.

They searched out things they thought you would care about and they took photos and made messages.

Figure 2. The beginnings of the giver and receiver experiences annotated with corresponding voiceovers. (This figure shows the interface and narration in the final versions released in 2019.).

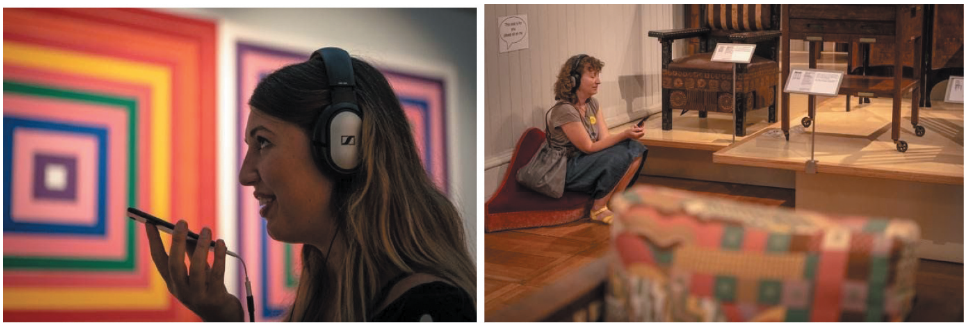


Figure 3. Speaking and listening in the museum space. Photos by Charlie Johnson.

theoretical approach through a collaboration with researchers at the University of Nottingham and IT University of Copenhagen (including the authors) over the course of three years' experimentation with concepts, combinations of user groups, and modes of gift composition, resulting in the web-based app described above. The web app was created in collaboration with Brighton Museum and has later been commissioned by the Munch Museum in Oslo, Norway, and the Museum of Applied Art in Belgrade, Serbia.

Our study of the first public deployment (Spence et al., 2019) revealed how the experience led many visitors to see the museum "through other eyes", either the giver through the receiver's eyes or the receiver through the giver's eyes. The experience as a whole tended to feel very different from a traditional audio guide, more often than not making an emotional impact of some sort based on the sense of connection cultivated by the app's design. In terms of design aims, Blast Theory considered both personalization and interpretation of the museum experience to hinge on the primacy of visitor–visitor relationships, folding the visitor's experience and interpretation of museum objects into the larger aim of supporting the visitor–visitor relationship. And although a visitor could choose anyone to receive their gift, they were prompted from the outset to think in terms of "someone special", someone for whom they would want to invest time and effort. All elements of the app were designed to support that premise.

Blast Theory's Lead Artist for the project in 2018, John Hunter, describes their aim for the voice narration in this way: "It allows her to put herself in the same boat with you and create a sort of instant familiarity" (Hunter, 2018). The user's spoken elements, in turn, formed part of the design element that they intended to make each visitor's gift "something that could feel meaningfully personalized rather than arbitrarily personalized" (Hunter, 2018). This can also be phrased as Blast Theory's adopting a strategy of "recipient design" (Fosh et al., 2014, p. 632), meaning that the selection and interpretation of exhibits was oriented toward a specific recipient rather than toward an official interpretation from the museum or a more general visitor demographic or persona, as is often the case with contemporary museums and cultural heritage institutions (Goulding, 2000). From the outset, the app was designed to scaffold, not dictate, the giver's interaction with the museum's contents in order to invite interpersonal interpretations that would have strong emotional, embodied, and experiential characteristics for each individual involved, and that would possibly reflect and possibly impact their relationship (for support in the gifting literature, see e.g., Camerer, 1988; Lawler & Yoon, 1993; Richins, 1994; Ruth et al., 1999; Sherry, 1983).

The feedback gained from the deployment in 2018 led the 2019 iteration to explore opportunities for meaningful personalization still further. Blast Theory considered the value of a fully in-the-wild digital proposition at a museum, what value a visitor would derive from the experience of using the app, and what value a gift receiver would derive from the gift. They took their cue from Kevin Bacon, Digital Manager of the Brighton Museum and Art Gallery, with whom they had developed a close working relationship over the 3 years of iteration. "One of Kevin's observations about digital experience in museums is that it's not around trying to sort out more content or more activities to museums, it's finding a way of focusing people's attention so they're not overwhelmed by the amount of content that's already there," said Nick Tandavanitj, one of Blast Theory's lead artists (2019). In turn, they focused the app even more tightly on the idea of presenting a handful of objects, or even just one, but to use every means at their disposal to let gift-givers put their own unique mark on it that might change the way that their receiver saw it or felt about it – and might change the giver's own experience at the same time. They did this partly by streamlining the user interface and the narrator's text, but also partly by including a limited selection of sharing mechanisms embedded in the gift-giver's or gift-receiver's own device.

> When we chose social channels, we explicitly chose ones that were private messaging channels as opposed to publishing channels because everything about the setup for it is to say this is for an individual, and about reflecting on that single person. … That's the value those channels give to the messages that you receive (Tandavanitj, 2019).

5. Never let me go

Never let me go is a two-player experience, in which visitors can playfully guide a companion through the museum. It provides two roles: The Avatar and the Controller. The Controller is given the tools to influence or shape the Avatar's experience, as both players explore the exhibitions together (Figure 4). The system consists of two interconnected web apps. Whilst the Avatar never really interacts with the app (except to press START), the Controller uses the app to send different commands, questions or instructions to the Avatar, who receives them as prerecorded voice messages. All audio is played for both players simultaneously, in order for Controllers to get a sense of what the Avatar is experiencing.

In the Controller app, there are six different categories of prompts to choose from (see Figure 5). The first category called "Basic commands" consists of direct prompts such as "Explore", "Go", and "Turn around". The purpose was to facilitate movement and exploration of the museums and its exhibitions. The second is called "Body" and consists of instructions relating to the body of the Avatar, such as "Close your eyes" (see Figure 6), "Hold your breath" or "Mimic this with your body". This was included to encourage the participants to have a more embodied approach to the museum experience. The third category consists of personal questions that could be used in relation to the art, for example, "What does it remind you of?" and "Who would you give this to?" The idea behind this category was to encourage introspection and emotional connections with the artwork. The fourth category is "Feelings" which consists of questions again to be related to the artworks, but this time in order to direct the Avatar's attention to the emotional content of an art piece. Examples are "Can you feel the tenderness in this?" or "Can you sense the anger in this?" The fifth category is called "Becomings" and consists of prompts that are deliberately ambiguous and open for interpretation. Examples are

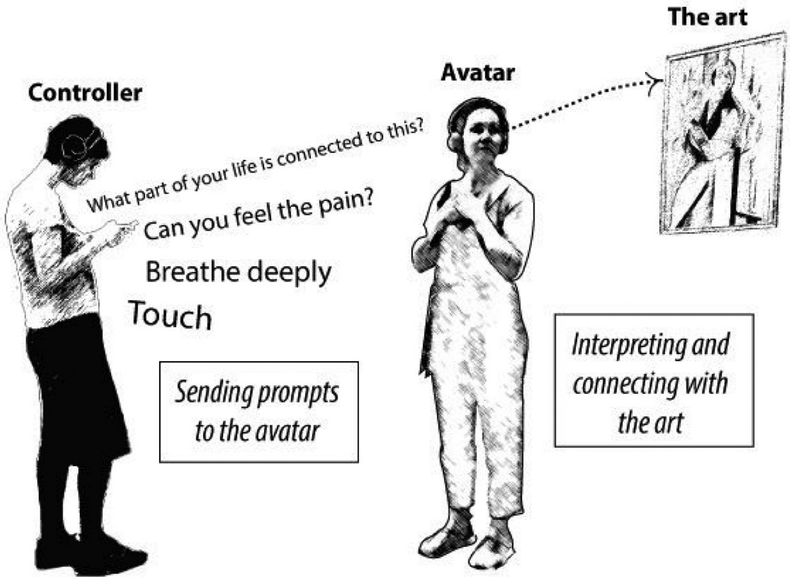

The art
Avatar
Controller
What part of your life is connected to this?
Can you feel the pain?
Breathe deeply
Touch
Sending prompts to the avatar
Interpreting and connecting with the art

Figure 4. An illustration of how *Never let me go* works.

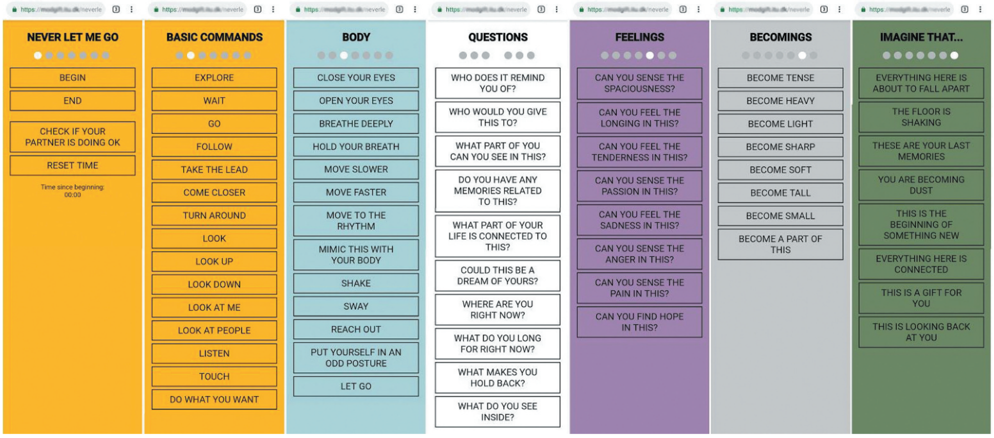

NEVER LET ME GO
BEGIN
END
CHECK IF YOUR PARTNER IS DOING OK
RESET TIME
Time since beginning: 00:00
BASIC COMMANDS
EXPLORE
WAIT
GO
FOLLOW
TAKE THE LEAD
COME CLOSER
TURN AROUND
LOOK
LOOK UP
LOOK DOWN
LOOK AT ME
LOOK AT PEOPLE
LISTEN
TOUCH
DO WHAT YOU WANT
BODY
CLOSE YOUR EYES
OPEN YOUR EYES
BREATHE DEEPLY
HOLD YOUR BREATH
MOVE SLOWER
MOVE FASTER
MOVE TO THE RHYTHM
MIMIC THIS WITH YOUR BODY
SHAKE
SWAY
REACH OUT
PUT YOURSELF IN AN ODD POSTURE
LET GO
QUESTIONS
WHO DOES IT REMIND YOU OF?
WHO WOULD YOU GIVE THIS TO?
WHAT PART OF YOU CAN YOU SEE IN THIS?
DO YOU HAVE ANY MEMORIES RELATED TO THIS?
WHAT PART OF YOUR LIFE IS CONNECTED TO THIS?
COULD THIS BE A DREAM OF YOURS?
WHERE ARE YOU RIGHT NOW?
WHAT DO YOU LONG FOR RIGHT NOW?
WHAT MAKES YOU HOLD BACK?
WHAT DO YOU SEE INSIDE?
FEELINGS
CAN YOU SENSE THE SPACIOUSNESS?
CAN YOU FEEL THE LONGING IN THIS?
CAN YOU FEEL THE TENDERNESS IN THIS?
CAN YOU SENSE THE PASSION IN THIS?
CAN YOU FEEL THE SADNESS IN THIS?
CAN YOU SENSE THE ANGER IN THIS?
CAN YOU SENSE THE PAIN IN THIS?
CAN YOU FIND HOPE IN THIS?
BECOMINGS
BECOME TENSE
BECOME HEAVY
BECOME LIGHT
BECOME SHARP
BECOME SOFT
BECOME TALL
BECOME SMALL
BECOME A PART OF THIS
IMAGINE THAT...
EVERYTHING HERE IS ABOUT TO FALL APART
THE FLOOR IS SHAKING
THESE ARE YOUR LAST MEMORIES
YOU ARE BECOMING DUST
THIS IS THE BEGINNING OF SOMETHING NEW
EVERYTHING HERE IS CONNECTED
THIS IS A GIFT FOR YOU
THIS IS LOOKING BACK AT YOU

Figure 5. Screenshots from the Controller app.

"Become heavy", "Become small" and "Become part of this." As with the "Body" category, these prompts were included for participants to explore new ways of being in the museum. Lastly, there is a category called "Imagine that". This consists of instructions intended to trigger the Avatar's imagination. The idea was both to facilitate narrative play and to induce a sense of urgency in order to intensify the Avatar's experience. Examples of this category are "Imagine that these are your last memories" and "Imagine that everything here is connected." Apart from the categories described, there is also a "Begin" and an "End" option in the menu. These trigger voice recordings with the purpose to frame the experience and give the players an idea of what to expect from each other.

The design of *Never let me go* was inspired by Blast theory and their work with the *Gift* app. In a similar manner, it was motivated by the task to design a (more or less) generic mobile app which could be used in any large to mid-size art museum, gallery or sculpture park. However, it was developed by Karin Ryding as part of her PhD project with a research agenda that involved exploring how museum experiences can be affectively enhanced through play. Therefore, whilst making use of some of the same components as the *Gift* app (such as using voice to give instructions), a ludic design approach was additionally employed. As a result, the design of *Never let me go* put a stronger emphasis on performative and corporeal qualities, as well as the relational dynamics which become naturally emergent as both players are physically present in the museum. The design strategy included the use of a certain level of ambiguity, in both content and player roles, in order to give room for curiosity, shared exploration and play. In a previously published paper, the notion of using play design as a *relational* strategy to intensify affective encounters in art museums has been put forward (Ryding & Fritsch, 2020). To a certain extent, this article works as an extension or broadening of that same discussion by including not only social play but also the perspectives of interpersonalization and intimacy.

The main trial of *Never let me go* took place between April 22 and May 2, 2019, at the National Gallery of Denmark. The participants were recruited beforehand

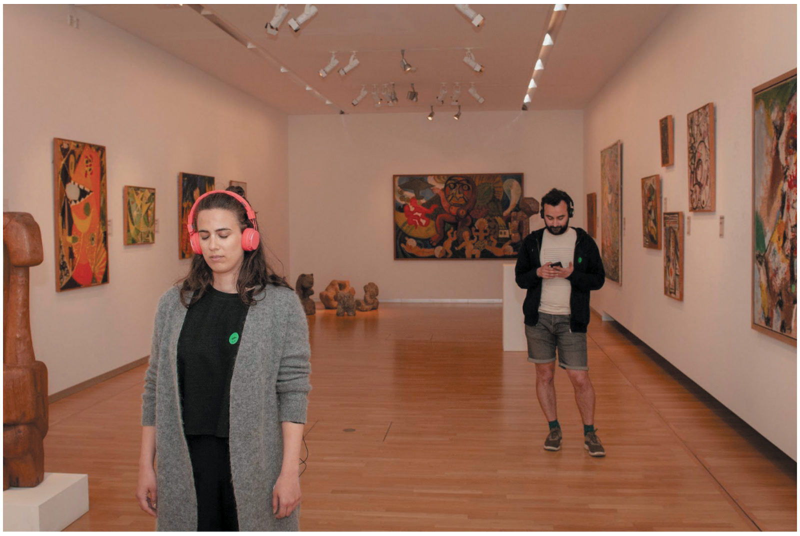


Figure 6. An Avatar being prompted by the Controller to close her eyes. Photo by Johan Peter Jønsson.

through public invitations on social media, and from a mailing list for people interested in cultural experiences in the Copenhagen area. The findings, which are presented in more detail in (Ryding, 2020) and (Ryding & Fritsch, 2020), show that participants found it to be a highly immersive experience, which was more personal, emotional and sensuous than a regular museum visit. Playful moments of teasing and laughing became naturally intertwined with more serious moments of introspection. One of the interesting advantages of the impromptu approach provided by the design, was the possibility for players to use whatever was happening in the present moment. When it worked at its very best, this led to emotional experiences where the conditions seemed to fall almost perfectly into place in a surprising, almost magical, way – close to what is called serendipity (Makri & Blandford, 2011). However, there were also moments when players felt disconnected or distracted from the exhibitions as their attention was drawn toward each other.

6. Interpersonalization

In both *Gift* and *Never let me go*, visitors are tasked with crafting an experience for another person – either the receiver of the gift, or the Avatar. In so doing, they may be said to be personalizing the experience for the other person – using their knowledge of the other person's interests and preferences to create and facilitate an experience they think the other may enjoy.

In *Gift*, the gift-givers are explicitly tasked with creating a personalized experience of the museum for the receiver: selecting objects based on what they believe the other person would like, and subsequently presenting them for the receiver with a photo and a personal audio message which addresses both the object and why this object is relevant as a gift for that receiver and that receiver alone. Some participants, including receivers, spoke explicitly in terms of personalization. For example, Helen, who both gave and received, commented without prompting that "it's nice how you can personalize it for different relationships, what they'd like around [the] museum." Interviews with participants revealed that gift-givers spent considerable effort searching for the right objects to give. However, both givers and receivers tended to value the gift more for the meaning it expressed about their connection with each other through the selection and justification of the gift's objects than for the objects *per se*. George described the type of experience that many givers reported:

> Two of the items I chose were paintings which linked me and my daughter together and our own histories. I would probably have done this anyway – paintings of children always make me think of my own children – but it was more special as I knew that she would see them too.

In *Never let me go* the personalization took place on several levels at once, leading to experiences that could be described as affectively engaging. First of all, as Avatars, the players would be guided through the museum by someone they knew and trusted, which opened up for new possibilities in terms of more personal and playful connections with the exhibitions and the architecture. The Controllers, on the other hand, focused on making meaningful experiences for their Avatars, but by doing so they also connected with the museum in a personal way. In the words of Anna:

> I wanted to see it as a way to share, like a feeling or a situation, wordlessly. You keep it separate and private, but you could still express: "This is something I enjoy. I like to think about spaciousness here. And now I make you think about it too, and hopefully you will enjoy it as well."

Test participants put effort into crafting the best possible experience for the receiver/Avatar:

> My only concern was to build the prompts in doing something that would be a cohesive and interesting experience. I was not concerned about giving too much orders but just about having a sense of progression or having something interesting. Not just random things or I'm going to make you do stupid things just because I can. (Peter)

The personalization that is done in these two designs is qualitatively different both from systems-driven personalization and user-driven customization, as discussed under related work. Rather, it reflects Eklund's concept of interpersonalization. An important difference between this and customization is that the object that is being adapted – the museum exhibition – is being appropriated by the visitor to be used in interpersonal communication and play. Thus, the experience of the exhibition becomes intertwined with the interaction between the visitors. In *Gift*, the givers are not just customizing an object but crafting an experience and initiating a dialogue with the receiver. In *Never let me go*, the foregrounding of the personal relation becomes even more evident, as it is entirely up to the players when and how to engage with the museum exhibition.

Thus, the personal aspects of *Gift* and *Never let me go* do not flow in one direction from giver to receiver or from Controller to Avatar, but instead form a process of interpersonalization that affects both participants in the exchange. The experience reflects both the giver and receiver and is personalized for and by both: "It makes you experience the museum in a different way. It's a new point of view. You have fun, similar to the fun when you play a game or share time with somebody" (*Gift* app user Lavender). The *Gift* app invokes elements of the complex social ritual of gift-giving, which comes with expectations and gratifications for both the giver and the receiver. The giver must exert appropriate effort to create a good gift, and make sure that this effort is evident in the gift. Ideally the gift should reflect the relation between the giver and receiver, whether it manifests itself in a deeply meaningful and touching moment of closeness, a simple joke, both, or anywhere in between. In return, the giver may receive gratitude and, hopefully, experience a strengthened bond with the receiver. The experience for both giver and receiver is mutually shaped by the relation between them, as in a dialogue. Similarly, in *Never let me go*, the Controller is handed the power – and the responsibility – to shape the experience for the Avatar. Interviews with test players demonstrate that many felt a strong sense of responsibility/expectation: "You get the feeling of having a responsibility and you feel like you want the experience to be good or interesting for the other person" (Laura). The receiver and Avatar contribute to the interaction by their reactions to the gifts or commands they receive and how they choose to respond to them. Following the commands allows the Avatars to explore and play with the boundaries for behavior in museums: "At times of course getting instruction gives you an alibi. But especially with the physical prompts I was limiting myself to what I feel is acceptable behaviour. Without any onlookers I might have done stuff bigger" (Lisa). While the system does not offer the Avatar any feedback mechanism through the mobile interface, the Avatars explored different ways to relate back to the Controller – from relying on discreet smiles, taking off the headphones and talking back, or playfully misinterpreting commands:

> You came next to me and said: "Come closer." I knew, I was sure that you meant to go closer to the painting, but I thought I'm not going to go closer to the painting. I'm going to go closer to her and make her uncomfortable. That was fun. (Cetin)

One interesting aspect of the interpersonalization offered by *Gift* and *Never let me go* is that they offer visitors a choice of roles: Giver or receiver, Controller or Avatar. In many cases participants have taken turns to try out both roles – e.g., they may give a gift to someone they came to the museum with, and receive one in return. If no one had already made a gift specifically for the visitor, they might instead choose to receive a generic gift created by museum curators. Although curators could not build on personal relationships with unknown visitors, the gifts were made with emotionally driven choices, personal explanations, and a similar style of delivery as many personal gifts. Within the overall role of "giver" we have noted several interpretations of that role. Some users created several gifts for others without receiving any in return, whereas some made only one. Those who arrived in pairs or small groups usually gave to each other and only occasionally gave an additional gift to someone not present. Many were excited to imagine their receiver getting the gift, while a few even created gifts for themselves. In the *Never let me go* test sessions, the participants were instructed to switch roles. However, in post-experience interviews some participants expressed a preference for one or the other role, indicating that if they were free to choose they might be more likely to take that role. This seemed to be based on a combination between their personality and the mood they were in. As Alex explains in relation to the Avatar role, "I realized that I'm very strong willed. So, I just want to go where I want to go and look. And now it was like oh I have to relate to what somebody is telling me to do". Whilst Lisa says, "I liked somebody else being in control. I'm in control of a lot of things when I'm at work and I was a little bit stressed before I came here. So, this was really nice."

Users of *Gift* and *Never let me go* employed a variety of strategies for creating satisfactory experiences for their counterparts. For instance, creators of gifts might employ different rhetorical styles of communication, ranging from playful and jokey to contemplative and reflective. Similarly, *Never let me go* players could use a variety of "play styles", such as playing with norms and boundaries (e.g., instructing Avatars to imitate the artworks with their bodies), trying to set up interesting or comic situations, or inviting deep contemplation. The instructions and commands in both apps were sufficiently open to interpretation to facilitate a spectrum of styles of engagement. As Peter explains:

> In terms of the playing element it was very dependent on the art. When the art became let's say very modern to a point where I couldn't connect with it. The playfulness became a defence mechanism. As I don't understand this, I will make fun with it. Because if I can't really connect with it or interact with it on an emotional level. Then I can at least make a fun experience out of it.

It is worth noting that the continuous oscillation between being serious and playful seemed perfectly natural to the players, reflecting their already established relationship dynamics.

The interpersonalization described here has some clear limitations in comparison to algorithmic personalization: in particular, it requires two users to collaborate, and relies on users investing significant time and effort. However, this approach also holds some advantages. First, as it relies on the relationship between two people, it allows for deep and meaningful connections that draw on the power of the interpersonal relationship. Second, as described above, the experience can affect both the people involved. As such, interpersonalization may benefit two people for each interaction. Third, this approach can be implemented without collecting personal data about the users, which may become an important advantage, as many users are increasingly concerned about privacy and protection of personal data.

7. Intimacy

We now consider how the kinds of interpersonalization described above and embodied in our two case studies critically depends on establishing a degree of intimacy between pairs of visitors, which in turn leads to a deeper sense of intimacy with the museum itself.

7.1. Intimacy between visitors

Our two case studies established different kinds of interpersonal relationships between visitors, both of which involved a degree of intimacy, albeit in different ways.

Gifting can be an intimate social experience, often conducted between close friends, family members and romantic partners, and may serve to reflect or strengthen social bonds. It may also rely, at least when done well, on a relatively intimate knowledge of the other in terms of the kinds of gifts that they would appreciate. Our study of the *Gift* app revealed how givers often create gifts for those whom they feel very close to, such as romantic partners, siblings, parents, children, or best friends. They then choose objects based on personal knowledge of their receiver and leverage the intimacy of their relationship to create personally meaningful connections between receiver and object, or in a three-way relationship between giver, receiver, and artwork. There were numerous examples of giving intimate gifts, typified by the following selections. Teenager Jack, on giving a gift to his girlfriend Lolly, reported, “I thought about what they liked, what their personal tastes were and also what would make them laugh if they found it as a gift.” Lolly, on receiving Jack’s gift, observed, “It was really thoughtful of him … like, taking inspiration for something he’s trying to make for me, something he knows I’ve wanted for a long time, showing me, like, an example, something if he could create it he would for me.” Gordon made a gift for his grandson: “My grandson has sent me his first painting he’d done, which I had gotten over email, and I just thought I’d send him something to do with art … ” Teenager Kristin, making a gift for her mother, said: “Some things stood out more. I thought that’s exactly what my mum would like, and so reading information about it made it feel more close to me or to my mum. So I connected my mum with this item and I think that helps remembering information better.”

We also see intimacy in responses from receivers. For example, Helen described her feelings about receiving her gift (given in exchange with her sister, who took part at the same time) as “excited when I open – when I found my gift. But I felt, I felt happier when I heard [the giver’s] voice, really.” Receivers tended not to want to share their gifts, either. Those few who did express an interest in sharing them would do so only with other intimate friends or family members. As Adam put it, “I feel like mine was very specific. I couldn’t send it to someone else [because it related to something in our shared past].” The intimacy inspired by *Gift* can occasionally be conveyed by the image as much as the voice: “It was really really lovely and quite touching, and it was a good conversation-starter. And it does say something about what the other person thinks of you in what they choose, and they don’t necessarily say in words.” This adult participant, Carol, had received a gift from her father, a man who did not seem chatty or overtly affectionate toward his daughter. Asked how she felt about their relationship after using *Gift*, she replied, “Closer,” and described it as “a bonding experience.” These levels of intimacy were by no means universal: many described the experience as simply “fun” (Pat), “just sharing something” (Gill), “confusing” (Wayne), or even “restrictive” (Susan). However, intimacy of some sort was one of the most common terms of reference for the app, and people who had strongly positive experiences spoke almost exclusively in terms of intimacy or similar relational feelings.

In *Never let me go* the setup with two roles, the Avatar and the Controller, provided a specific form of power relation between players, but one that also appeared to strengthen feelings of intimacy between the two. As the Avatar, they would put themselves into the hands of the Controller, making themselves vulnerable to a certain degree. Controllers, on the other hand, would accept the challenge of being the person in charge of the situation which also entailed being exposed to critique. These shifts in agency led to a special bond being created between the two players, as they explored the museum together. As Alex puts it: “If it’s with somebody that you know well, it gives a certain framework and certain ways to exchange.” The prompts also provided the opportunity for players to play with intimacy in the form of induced introspection. For example, by using the available questions in relation to specific artworks, Controllers were able to trigger very personal moments for their Avatars. Lisa gives this example:

> We were looking at a painting similar to “The Last Supper.” First, I asked: “Imagine that this is looking back at you.” And then I followed up with “What does it remind you of?” Because nobody in the painting looks at you, they’re all kind of looking sideways, my partner had this experience that he was being isolated because nobody was looking at him. That brought up some personal memories from his youth. So that was really unexpected and a personal moment and revealing some reflections.

Sharing intimate moments, in this way, was a matter of trust. It was the couple’s individual relationship that set the frame for how the intimacy was perceived. If the two players were already in an intimate relationship, this might strengthen the experiences in many ways. As Laura says, “I think it is easier when you know the person well. So, you have an idea that okay this is going to make them react.” On the other hand, if the couple had not established that level of intimacy beforehand, it could be interpreted as inappropriate to ask this type of personal question. The *Gift* app's giver-receiver pairs did not place themselves in each other's control quite so overtly and could often receive their gifts on their own, so issues of trust emerged rarely and then only in a positive sense, as in Josephine's description of her feelings toward her giver after using *Gift*: "I still feel the same way in the sense that I'm in love with him. I trust him and I feel understood, I guess." Two others said that the objects they chose spoke to or reflected the trust they feel in their relationship with their receiver: Katalin described how "I sent a picture to my friend. To me, it means a close friendship, also trust, thankfulness"; and Lindsay's objects spoke to the "good sense of humour" and "deep trust there." Finally, Mark felt trust in the app's "instruction" to go with their instincts and wander the museum until something called out to them. "I just trusted, yes" – and that trust paid off in a worthwhile gifting and visiting experience.

Trust is important to helping negotiate various risks that come along with the use of intimacy. One is of experiences being uncomfortably intimate. As Lilly of *Never let me go* commented: "Some of the questions were too intimate. I felt that those questions were leading more toward deeper feelings and memories. Like when you ask them in that way, in an art setting. I don't know. It felt weird." The idea that other museum visitors could be watching was also a source of discomfort. As Michael of *Never let me go* says:

> It felt somewhat awkward, because I was aware of people around the room. Probably they were not looking at all or they were minding their own business. But it's part of most people's common thoughts, no? How am I being perceived or am I acting out of place.

Quite a few visitors to Brighton Museum found it uncomfortable to speak into their phones inside the museum, at least at first, and sought not to draw the attention of other visitors or museum staff to themselves. Many of these participants found their recordings of second and third gifted objects to pose far less discomfort. The intimacy of the experience was able to overcome this obstacle for one receiver in particular in a remarkable way. Natasha found the experience both "moving" and "touching." For her, "somehow the phone was, it was conveying something precious to me. So … having had a discomfort with it, initially, it went away and turned, and became a positive, a very positive thing". We received no feedback on inappropriate or otherwise unacceptable gifts that impacted negatively on personal relationships, though to be fair, this may be because the short and location-bound nature of our 2018 deployment allowed us far more access to givers than to receivers.

7.2. Intimacy with the museum

While our two experiences evidently hinge on intimacy between visitors, a second and different sense of intimacy also emerged from our studies in the form of greater intimacy with the museum itself. Rather than encouraging visitors to undertake wide-ranging explorations of the entire museum or to try and take in a large exhibition in a single visit, our experiences focused them on engaging with fewer exhibits but in different, arguably more focused, ways. The constraint to include only three exhibits in a gift was designed into the *Gift* app from the outset and clearly shaped how participants engaged with the museum, as both givers and receivers engaged closely with just a few selected objects at a time, which led them to make personal interpretations of those objects based on their relationship with their gifting partner.

We saw a strong tendency in the *Gift* app for givers to interpret exhibits through the lens of their relationship to the receiver. Consider for instance, the audio message recorded by the teenager Kristin, accompanying a painting in her gift to her mother (see Figure 7):

> So, this picture is called Alice in Wonderland, from 1879, and the sofa reminded me a lot of grandma's sofa with the dolls. And the poem says that this is a big sister reading to her little sister, and

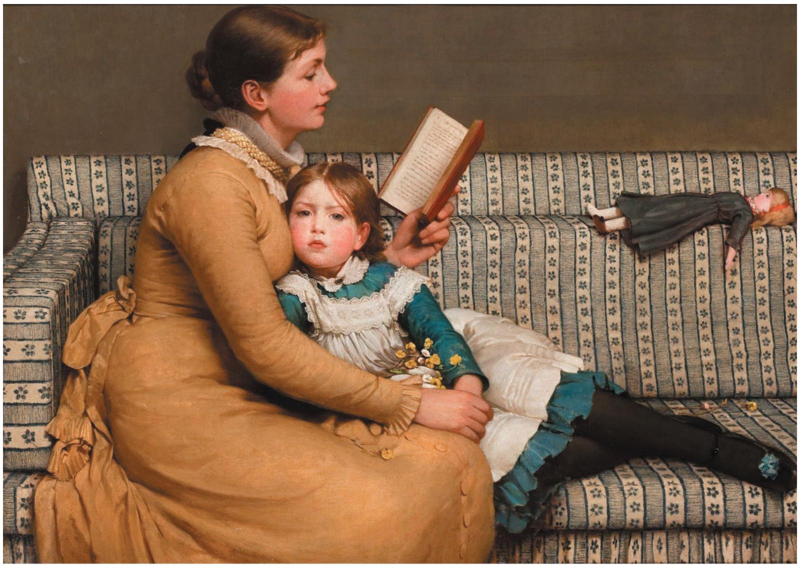


Figure 7. "Alice in Wonderland". Oil painting by George Dunlop Leslie, c1879. Royal Pavilion & Museums, Brighton & Hove (CC-BY-SA).

> I think you can imagine me and Leni sitting like this and her reading to me my favourite story.

In the case of Lolly and Jack mentioned earlier, Lolly chooses to give Jack a "lips sofa" (see Figure 8), because Jack has said that her lips is his favorite thing he likes about her face. These and many other examples show how visitors made personal interpretations that redefined the meanings of exhibits to visitors in terms of their personal relationships and that through this made more intimate connection with the exhibits. From a curator's perspective this might potentially seem crude or deflating; whatever meaning the artwork has according to the artist or museum curators is pushed into the background, and instead it becomes a "prop" in a daughter's reminiscing with her mother or in two teenagers' flirting. Seen from a different perspective, however, these visitors are engaging in personal experiences in which the exhibits play an important part, thus arguably making them come to life in their particular context. This may also involve reappraising the wider historical meaning of the exhibit. Returning to the example of Lolly, she reflected in her interview that:

> My boyfriend is into product design and … furniture and architecture stuff. And that one really, it was bright red, it was the shape of lips, and it really got my attention. It would usually get my attention, but I wouldn't usually read into it. But this is the first time I read into it. So I thought that was interesting, the kind of long drape. But with my boyfriend's lens on, I guess I looked at kind of the artistic side; where they got the inspiration from, the colour, or what material they used to make this and all this other stuff …

Such personal interpretations would seem particularly appropriate in the case of art museums whose exhibits by their very nature would seem open to personal interpretation. However, one can argue that they are also valid within other kinds of museum as they introduce new perspectives and voices alongside existing ones, and in a sense acknowledge that many exhibits would have had personal meanings for their original owners that are often lost in the process of a wider historical interpretation.

Although some visitors felt that *Gift* was distracting on some level, and others engaged in offhanded ways that are not likely to be enduringly memorable for them or their receivers, a substantial proportion felt that their increased feelings of closeness to their gifting partner in some way encompassed the gifted object, as well, as discussed above. Many also articulated specific ways in which their engagement with and learning about museum objects increased through their new personal attachments and unusual ways of seeing the gifted objects. The reasons that stood out in our analysis can be grouped into categories of artistic impression, expanded horizons, new motivations, and app mechanics. The first category, artistic impression, cover experiences such as that described by the test participant Neil: "Some paintings touched me more deeply and on a more personal level having approached them with that person and my connection to them already in mind." Many participants tended to conflate their impressions of the gift with the other person involved (giver or receiver), such as expressed by Sian: "Yes, the gift made me filter my impression thinking of the person the gift was made for. Brought back great memories and important things in our relationship." In terms of expanded horizons, we point to the giver's choices leading receivers to dwell on objects that they would normally ignore, such as Louise's comment that the app "definitely led to focus on a couple of objects more than I would've" and Dan's assertion that they had learned through using *Gift*: "Yes I did, a new way to look at some pieces otherwise I would not have thought about." New motivations also relate to the simple fact that the app directs visitors to objects they might not otherwise have seen, but they discover in the process a new motivation *within themselves* along the way. This can be especially important for givers, who might struggle to change their mental orientation from visiting to gifting. James stated that "I'm not one that can stay in a museum long and will lose

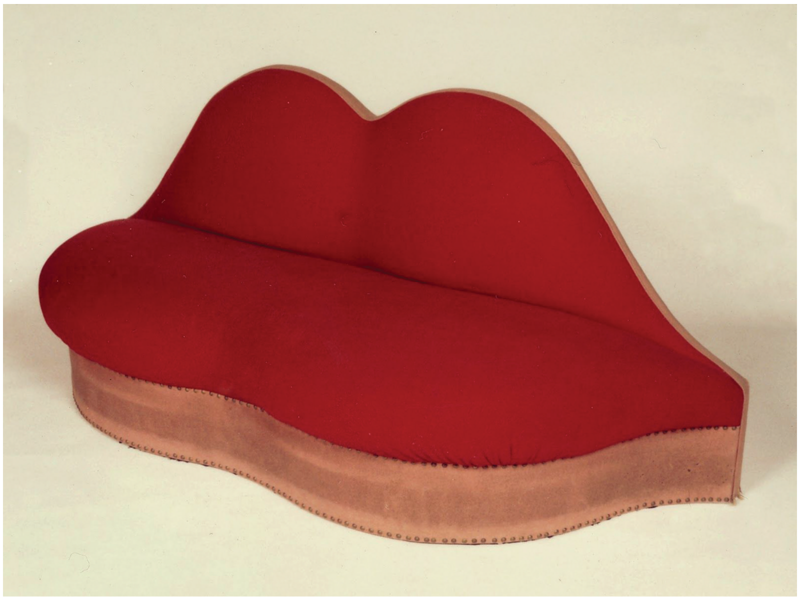


Figure 8. Mae West's Lips sofa, Green & Abbott; Salvador Dali; Edward James, ca. 1938. Royal Pavilion & Museums, Brighton & Hove (CC-BY-SA).

interest, but while using the app I stayed pretty interested throughout the museum since I had a 'mission' in a way." Meanwhile, Diana not only maintained but increased her interest:

> Because it makes you engaged. Normally I don't really read those, I just walk and see, Oh, that can be played or whatever. But choosing the gift made me read the caption and like get all the other context in as well, and I was like oh that's interesting. And it like helps make it even deeper. I normally don't read the captions so that was interesting.

Finally, the app's mechanics of requiring voice recordings were cited as reasons for making personal connections to the objects: "Yes, because I had to verbalize why I liked them" (Matthew), and "it's a good way to communicate thoughts that otherwise would go unspoken" (Dan). These interpretations of "intimacy" and "connection" reflect the wide variation in ways that people of all ages and many backgrounds could make sense of the app and sometimes use it to discover unsuspected ways of connecting with and learning about parts of the collection.

Our study of *Never let me go* also showed that participants experienced the exhibited artworks as well as the museum architecture in new and interesting ways. Playing in this way led to fewer but more intimate encounters with the artwork. As Jenny explains, "Maybe we saw less, but some of the things I saw I remember better. Like the shapes I had to enact. Some of these will stay with me much longer because of this experience." And as Nina says, "I definitely think I was looking more into detail than usual. For example, during the explore phase, I was trying to look at things a bit more closely." Somehow the receptive quality of the Avatar role would lead to a different awareness or a specific mind-set that allowed for these encounters to become more personal, attentive and intense than usual. As Michael explains, "It felt stimulating. A way of asking new questions. It helps you to use the beginner's mind. To look with fresh eyes on things and step out from your regular thought-inertia". A shift seems to have happened where the role of the observer turned into something else, something more open. Laura describes it in this way:

> I think it was a chance to connect with the art and not just be an observer, but to be part of the paintings but also the whole room. It helped me enjoy it and understand it more. And think about it more. It wasn't just my eyes watching. It was my whole mind observing.

Much focus was also put on emotions, which had a clear effect on the participants' experiences. As Peter explains, "I was more aware of emotions, because I was prompted to be thinking about things I normally don't think about. So yeah, this museum visit was more emotional than my usual museum visits." Thus as with the *Gift* app, the intimacy of the situation, reinforced by the design, would lead players to explore and reflect upon their existing relationship, and it was through this process that an active reinterpretation of the museum context took place. On the negative side, this relational focus would overshadow the museum experience and distract the participants from the curated material. As Lisa says, "I think it became a lot more a tool for the relationship between us rather than the museum itself or the exhibition." On the other hand, it proved to be a powerful tool to engage visitors on a more personal level. As Rebecka explains, "If someone knows how to push your buttons, then the whole thing might even feel like it was curated for you. If it's done in the right sequence, in the right order".

We now drill further into three key design strategies that appear to have been important in mediating this more intimate relationship with the museum: heads-up experience, tone of voice, and vicarious experience.

7.2.1. *Heads-up experience*

Both the *Gift* app and *Never let me go* focus on delivering a heads-up experience in which visitors' attention is directed toward exhibits rather than to the mobile screen. This was done to address previous concerns among museum professionals about screen-based experiences diverting visitors' attention away from the physical exhibits, a concern frequently referred to as "the heads-down phenomenon" (Hsi, 2003; Lyons, 2009; Walter, 1996; Wessel & Mayr, 2007). Delivering a heads-up experience involves extensive use of audio supported by limited amounts of text and interaction on the mobile screen rather than for example, video which requires sustained attention to the screen. However, it is also about the "content" of the mobile experience. In our two cases the mobile screen is employed to deliver instructions on how to engage with exhibits in new ways rather than primary interpretation created by the museums' curators. The *Gift* app's developers offloaded all interactions that they reasonably could to audio, with the screen serving more as a support and reassurance than a focus of attention except, of course, when photographing gifted objects and starting audio recordings. Mobile content repeatedly encourages visitors to explore the museum, attend to exhibits and see them in new ways. Any interpretation offered by the museum remains on the walls of the museums, in labels or other audio-visual exhibits, or in guide books, rather than being brought into the mobile. Thus, the mobile experiences are not about alternative ways of providing interpretation, but rather seek to shape how the visitor engages with and thinks about existing resources.

7.2.2. *Tone of voice*

A second important aspect of creating a more intimate relationship with the museum were the distinctive "voices" adopted by the apps when talking to visitors. *Never let me go* created a soundscape with a vocalization of the prompts in a calm and soothing way. Interestingly, it never seemed awkward for the participants to use another person's voice to communicate. As Daria explains, "A voice in a headset is quite intimate for me. And it wasn't her voice, but it was like something that she was saying". The constraints in the communication, in combination with the tone of voice, helped to bring in new perspectives during the museum visit. As Nils points out: "I wouldn't normally ask things like: 'What does it remind you of?'. But here you kind of realize that that's true. You can have different angles where you can come from."

For the *Gift* app, the intimate voice of the narrator described above was critical to the app. It lets the narrator "be really familiar with you because this idea of giving and receiving gifts, and the way she talks about it, is very human. We've all got an experience of it … " (Hunter, 2018). Hunter's intention was that visitors would perceive the voice as "familiar, relaxed" and "provocative" in the sense of provoking action. He also recognized that this unusual tone was not something that could be achieved in all instances for all people. "Some people really crave that intimacy. Some people [feel] distanced by it because it's just not what they [are] expecting. You have to go one way, and then let people respond" (Hunter, 2018). Indeed, visitors reported mixed responses to it, with some really tuning into the emotional tone of the experience but others finding it inappropriate or even unnerving. Blast Theory's own reflections on the tone of voice were that:

> There's a tone that's set, and there's the level of familiarity and the language that implies they know you and have a kind of relationship with you even though it's non-personal, and it's suggestive and it leads you through a process of thinking which is intended to be guiding you into a much more reflective space. (Tandavanitj, 2019)

The participant responses we gained in 2019 seem to indicate that the artists' heightened emphasis on tone of voice had succeeded in establishing the vision described in the quote above. For example, when asked whether they would share the gift they had received with others, Cathy's reply was: "by the way and intensity the woman spoke, I'd think to give the gift only to someone really close to me."

7.2.3. Vicarious experience

Both experiences create an intimate experience with the museums and its exhibits by encouraging visitors to see them vicariously through the eyes of another. In *Never let me go* the Controller vicariously experiences the museum through the Avatar. In the *Gift* app the giver does so through the receiver, partly in the form of an imagined experience (i.e, what they will do and how they will feel when they experience the gift), and partly through messages recorded by receivers after receiving their gifts. In this sense, they mirror earlier HCI research on the vicarious experiences of people watching their friends' facial expressions, heart rates, and the like as they rode an amusement ride which led to both parties feeling closer together (Schnädelbach et al., 2008).

However, the question then arises as to how this impacts others who are present in the museum, including "unwitting bystanders" (Benford et al., 2006; Sheridan et al., 2007) who may not be aware of what is taking place. Will they notice and be perturbed by unusual behaviors? In *Never let me go* some participants incorporated other museum visitors into the play to a certain extent. For example, one Avatar started to follow another person instead of the Controller when the prompt was "Follow," and sometimes Controllers would try to make their Avatar do things in front of guards or other visitors to make it more embarrassing and/or fun.

A final point on vicarious experience concerns the extent to which participants might share such intimate experiences. Might gifts be published and shared on social media? At present, this is a matter of choice for the participants. In this context, it is worth noting a subtle but important distinction by "gifting" and "sharing" raised by Spence (2019) who draws on Weiner's concept of inalienability from the gifting literature (Weiner, 1992) to make a separation between the two. Gifts have the ability of a "personal" (or intimate) possession to invoke and symbolize personal memories and knowledge of the giver that cannot otherwise be seen by others and this "inalienable" property makes them distinct from things that are shared more widely without such personal connections. So far, no users of *Never let me go* or the *Gift* app have chosen to share their intimate experiences widely on social media. Museum experience designers should therefore carefully consider this boundary, as well as the broader ethical implications for privacy, before encouraging the sharing of intimate museum experiences. When does intimacy stop and vicarious experience become voyeurism?

8. Interpretation

For our final theme we consider the museum's role in supporting interpersonalized and intimate visitor interpretations and reflect on how this responds to wider changes in the nature and approaches of museums in general. A notable feature of both our experiences is that they encourage visitors to make their own interpretations of exhibits, both for and through others, rather than directly conveying the museum's own interpretation. This requires the museum to step back and make space for interpretation by visitors. This is not only about saying less, but interestingly, also constraining the possibilities to interact with the museum, for example, limiting the numbers of exhibits engaged with as discussed above. Making space in this way is a "less is more" strategy; saying less about fewer things makes space for visitors to say more for themselves. Creative practitioners often employ limitations as a tool for scaffolding creativity (Elster, 2000; Mathews, 1997; Rettberg, 2005), and the limitations in the two designs presented here may have a similar effect in reducing the "fear of the blank page." Furthermore, the fact that the designs do not offer any interpretational or educational content may offer the participants some license to be personal and playful without fear of appearing shallow or uneducated. Limiting the visibility of their interpretations to an interpersonal exchange as discussed earlier further removes the risk of being judged by others than the receiver.

Both our experiences are therefore "low bandwidth", by which we mean they rely on relatively thin communication channels, at least when compared to media-rich digital tours and immersive experiences. Both experiences reflect the previously mentioned research by Kaye et al. (2005) where the constrained nature of communication provided space for rich (re)interpretations based on the partners' shared understandings of each other. The tight constraints of *Gift* can also be seen as a rich opportunity to share a contemplative moment that might have been "drowned out" by a more immersive or media-rich experience: "I really do love making a personal connection between my visit and someone I feel will appreciate the gift. Much more intimate than texting a picture from your visit" (Emma from the Gift study). A further benefit of this "thin channel" approach is that both experiences are technically lightweight, requiging little investment in infrastructure or additional content by the museum.

It is also noticeable that both experiences are open and somewhat ambiguous in nature, with visitors being able to interpret what to do in various ways, reflecting the idea that introducing ambiguity into an experience design can be an important strategy for making space for interpretation as discussed by Sengers and Gaver (2006) building on Gaver et al. (2003). In *Gift*, the app's central proposition to users is ambiguous: Inviting them to create gifts out of objects that they cannot buy or own, but just take photos of. It also invites ambiguity/play with what "counts" as an object – e.g., users have included photos of fire extinguishers, selfies, etc. Furthermore, the genre of communication is also ambiguous: Are givers creating a personalized guide for the receivers, trying to teach them something, or writing a "postcard", or a personal story, or a joke? In *Never let me go* the instructions are imbued with ambiguity and it is left up to the players to decide how to interpret and act on them. This combination of constraint and ambiguity makes the approaches described here quite different from the dominant tendency of narrative-driven approaches to designing tour guides that emphasize storytelling and rich media or immersive content (cf. Bedford, 2001; Johnson, 2006; Nielsen, 2017; Wong, 2015).

However, the museum is not entirely withdrawn from the experience, but rather provides a scaffold of resources that support visitors in making their own interpretations. These include the museum environment, exhibits, existing interpretation on the walls, in guidebooks and so forth, and also instructions via digital channels such as *Gift* and *Never let me go*. Instructions are especially important and need to be carefully designed to achieve several goals. As artists with a background in performance and a long history of making interactive digital experiences, Blast Theory brought great expertise in the design of instructions. A previous study of their work *Ulrike and Eamon Compliant* showed how voice and text messages could be skillfully crafted to tell participants where to go, what to do, but also how to behave in public, while also setting an appropriate emotional tone (Tolmie et al., 2012). These same goals are evident in the design of the voice instructions in *Gift* and *Never let me go*, as discussed above. In interactive experiences of these sorts, instructions are the main content, with the skill of the narrator being to guide visitors to tell their own stories. In play, as well as other improvisational practices, a clear framing which helps participants to grasp what is expected of them is also key. In *Never let me go*, the introduction received by the Avatars said:

> Welcome to this Avatar experience. You will soon hear instructions chosen by your partner. Follow these instructions to your own ability and desire. Make it as dramatic or as subtle as you wish. Remember to stay safe and stop whenever you want. When in doubt of what to do, relax and enjoy the art. Now start by doing just that. Enjoy!

This set an overall tone to the experience and helped Avatars to relax by making it clear that it was up to them to interpret the prompts that were sent by the Controller as well as giving them a way out if they needed it.

9. Design strategies and challenges

We have presented two unusual examples of how to deliver personalized experiences to museum visitors, one in which visitors make personal tours as gifts for others, and a second in which one visitor remotely controls the in-the-moment experience of another as they follow them around the museum. Our findings from deploying and studying these in museums reveal that they were generally well received by visitors and that they created opportunities for engaging them in making a particular kind of interpretation in which they view the museums' exhibits through the lens of another person. Underlying these two experiences are two important design strategies, *interpersonalization* and *intimacy*.

The strategy of designing for interpersonalization differs from previous approaches to personalization and customization in two important ways. First, conventional approaches focus on bi-partite interactions between the "business" (in our case the museum) and the individual "consumer" (the visitor). Interpersonalization, on the other hand, involves a tripartite relationship among two "consumers" – the giver/controller and receiver/avatar – with the "business" or museum supporting and scaffolding the relationship. Second, personalization has largely been seen as an algorithmic process and customization a more human-driven one, whereas interpersonalization sits between the two, being primarily driven by humans who do the heavy lifting of tailoring experiences, but scaffolded by the system that provides the instructions and resources to support them. Thus, another way of phrasing our discussion about interpersonalization in the context of the museum is that there are now two kinds of visitor in the picture; one who receives the personalized experiences, with some context provided by the museum, but also a second who co-creates the experience with the museum. The emergence of the co-creator is especially interesting as our examples suggest that people can enjoy and benefit from interpersonalizing experiences for others. In other words, rather than being a chore or hard work, there may be opportunities to engage people who wish to undertake the work of interpersonalizing for others, perhaps because it demonstrates their positive feelings toward the receiver (as discussed in Spence et al., 2019) and/or because it is entertaining or informative in its own right. We also note the possibility to combine our approach to interpersonalization with more algorithmic approaches in future work, for example, using algorithms to recommend potential exhibits of interest or even learning from how humans interpersonalize experiences to develop more subtle algorithms.

Our second strategy of designing for intimacy similarly involves adopting a tri-partite rather than bi-partite perspective. The intimacy here is not only between pairs of visitors, but also with the museum and its exhibits. By fostering intimacy between visitors, the museum may then open up an opportunity to create more intimate relations with its own exhibits. This intimacy arises from deep personal knowledge of the other person as required to choose the right gift or instruction for them, but also to a degree on a vicarious experience, being able to see (or at least imagine) their experience. It is also scaffolded through the careful design of instructions including tone of voice, which may need to differ from that normally adopted by the business (e.g., a voice that is unlike a conventional tour guide or curator). Our findings also speak to the design of vicarious experiences as previously considered in HCI. *Never let me go* delivers an overtly vicarious experience, while *Gift* perhaps relies more on the giver's imagination of how any object might be selected, described, and received, and the receiver's imagination of the gift-creation process. Like the vicarious experiences on roller coasters discussed above (Schnädelbach et al., 2008), there is also an element of carefully managing discomfort both within the design and as enacted by all participants, not only in terms of the potential embarrassment of a poorly chosen experience, but also considering the presence and impact on other bystanders in the museum. However, the risk of "making a fool of oneself" as well as having a hidden purpose that excludes other visitors are both components that strengthen the intimacy of the experience to begin with.

Having set out these two overarching strategies, we reflect on opportunities for realizing them in practice:

- Personalization can be about getting visitors to personalize for each other, rather than the museum doing the personalization – manually or algorithmically. This can be a low-cost strategy, requiring little technical infrastructure beyond visitors' own devices and little new digital content, as visitors make this for each other.
- Interpersonalization may foster a new kind of interpretation, one in which someone interprets an exhibit for another, rather than the museum interpreting it for them, or them interpreting it for themselves. This can be seen as opening up a space of "second-person" interpretations to complement the long-dominant third-person perspective of the museum's canonical interpretations and the more recent emergence of the first-person perspective of the individual visitors' interpretations.
- Employing intimacy by getting visitors to bring their personal relationships into the museum or to have a vicarious experience can be a powerful approach, but needs to be treated with caution lest it backfire, leading to overly uncomfortable or intrusive experiences. It may require the museum to adopt a different voice than usual, but perhaps then there are also risks about authenticity and appropriateness. These are important questions that require further research.
- Interpersonalization and intimacy are subtle strategies that require the museum to be prepared to stand back and hand over control to visitors. Consequently, it may lose control of their interpretations which, for example, might become more about visitors' own stories. It may also lose control of the technologies as both of our experiences could potentially be deployed in a museum without its direct involvement as we discuss further below.
- We note that there may be interesting possibilities to extend these approaches to remote visiting situations, something that may come to the fore given the consequences of the COVID-19 global pandemic in the short term (mid-2020 at the time of writing) and the pressures of climate change in the long term, though this is not a topic we have directly addressed in this paper.

However, we also call attention to potential challenges arising from our two strategies. Most notable among these is how to reintroduce the museum's perspective back into the experience. How do these strategies stack up against the wider educational agenda of many museums, either formally through school outreach programmes, or informally through championing participatory perspectives and ideologies, for example, around diversity and inclusion? How are these to be brought into the picture? How do museums still interject their values and knowledge into the dialogue? We suggest some ways in which museums might respond to these challenges:.

- Museums are still responsible for choosing which exhibits are available to visitors, where, and when. They can still provide conventional interpretations outside of the immediate digital experience, through labels, for example. They can also use any other digital or analog means of exposing visitors to "the facts" as the curators understand them, and to encourage as much or as little structured dialogue with – or challenge to – the curatorial stance as they wish.
- Museums can offer links to official interpretations during a digital experience such as the *Gift* app or *Never let me go* that invites personal interpretations. We suggest that one possibility is to allow visitors to access these officially curated interpretations afterward, building on the approach of Fosh et al. (2013) in which visitors to a sculpture garden first engaged with each sculpture in an experiential and open way before being offered "official" information as they walked away.
- There are opportunities to customize the experience, including branding, initial message and instructions. Interestingly, both of our experiences are sufficiently generic that they might in principle be rolled out in nearly any museum. However, as Blast Theory learned in adapting *Gift* for the Munch Museum, a blanket approach may be easier said than done. There may easily be issues of language, tone, policy, and infrastructure that will shape the uptake and content of the app, which may in turn shape common visitor experiences. For example, human resource constraints and museum priorities precluded Munch Museum staff from engaging with individual visitors personally about the app, which instead appeared as a free offering on its official price list. Both museums advertised the app using beautifully designed postcards placed inside the museum, yet these led directly to relatively few new users regardless of context – in cluttered competition with many other such cards in Brighton, or prominently and exclusively displayed on the gallery walls in Oslo. *Gift* referred to "objects" for the eclectic, Victorian-era collections of the

Brighton Museum, but this term made little sense in the Munch museum which is devoted entirely to visual arts. Similar reevaluations and adjustments have been made in subsequent deployments.
- Museums can also provide example experiences of unusual apps such as the ones discussed here to illustrate the process, set expectations, and engage visitors: for example, the *Gift* app as deployed at Brighton Museum in 2019 began with the chance to receive a gift made by the museum's curators. This approach might extend to drawing on the voices of "friends" of the museum and other influencers, thereby deepening the sense of investment in "their" museum.
- Finally, we stress that the kinds of approaches that we propose here are not intended to be exclusive or even to replace other ways of engaging with the museum, but rather should be seen as complementary, engaging visitors in new ways that might lead to or follow on from other forms of experience. A challenge for future work is to better understand how to connect them to these other existing kinds of experience.

Although there are many points of the visitor journey where museums can interject their voices, the kinds of experience we have presented here undoubtedly do involve a shift in the balance of control between museums and visitors, reflecting the longstanding trend in the new museology literature. This raises further challenges associated with giving up control to visitors. What happens if they make uninformed interpretations or say terrible things to each other, for example, involving hate speech or bullying? This is another argument for restricting the visibility of visitors' interpretations to themselves rather than placing them on social media sharing platforms. On the other hand there are opportunities to learn from visitors too. What exhibits do they choose and why and how might this inform future curatorial choices?

Such questions hinge on the question of ownership. First, who owns the interpretations that visitors generate, especially given that they may be highly personal and sensitive? What level of analytics or moderation should museums undertake? Second, related to this, who owns the museum and its exhibits? It is perhaps a sobering thought that the two experiences we have introduced are potentially relocatable to many museums without them needing to be involved at all. They require no heavy content development or infrastructure that might not already be publicly available. Indeed, these designs invite us to see the screens of visitors' own devices as their own personal territory, under their control, just as the walls of the museum are likely to remain under its control.

Related to ownership is the question of appropriation. HCI has tended to view appropriation as a positive aspect of users' engagement with digital technologies in which they adapt interfaces to their own (sometimes unexpected) purposes. However, the term has quite a different connotation in museums, where it typically refers to borrowing or even stealing another culture's artifacts and histories without permission, a deeply problematic challenge in the era of post-colonialism (Ziff & Rao, 1997). Our approach raises the question of whether enabling visitors to directly appropriate museum exhibits for their own personal purposes, such as making gifts for others, ppens up the museum to new and different voices and might even allow people to reclaim their historical artifacts, or alternatively whether it runs the risk of extending the misappropriation of others' artifacts from an institutional to a personal level.

Answering such challenging questions falls outside the scope of the data that we gathered and hence of this current paper. However, we note that inviting visitors to make personal interpretations on their own devices will inevitably lead to these kinds of tensions and questions and that exploring them in practice is a key goal for future research into interpersonalized and intimate experiences.

10. Conclusions

We have presented the design and deployment of two museum visiting apps that involve visitors creating experiences for one another, one by transforming exhibits into personal gifts, and the other by having one visitor direct a partner's actions in real-time as they explore the museum. While unusual by conventional standards, especially when compared to established virtual tour guides, we argue that both were successful at creating engaging and thought-provoking experiences that led visitors to see the museum and its exhibits – and perhaps each other too – in new ways.

Our reflections on these experiences informed two overarching design strategies for designing museum experiences: interpersonalization in which visitors personalize experiences for each other; and intimacy in which such experiences draw on and reinforce more "close up and personal" associations, both among visitors and between visitors and exhibits. We further reflected on how these two strategies raise new opportunities and challenges for museum designers, especially how they invite museums to take the brave step of standing back to make space for visitors to generate their own interpretations, while still providing the resources to underpin these and trying to shape them more generally.

As a final comment, while our focus has been museums, we note that the approach of interpersonalizing intimate experiences might extend to other domains. Other cultural experiences such as games and entertainment are examples with clear parallels to interactive experiences in cultural heritage institutions. More commercial kinds of gifting provides another obvious example. Social media and personal communications may also benefit from this more nuanced approach to the sharing of experiences in public places. We also note the potential to impact on the design of learning experiences, especially within the museum context but also in almost any other context that can leverage the ability to create interpersonalized, intimate experiences from unusual external stimuli.

Note

1. Eklund's use of the term differs from previous uses in Psychology to refer to a shift in psychoanalytic theory that draws increased attention to the interpersonal relation between patient and therapist (Aron, 2001; Bonovitz, 2009) and in Education (e-learning) research to highlight the importance of interpersonal interaction and communication between people (Garrick et al., 2017, pp. 5–6;

cf. also Oomen-Early et al., 2008), though the latter would appear to be somewhat related through its emphasis on the social.

Funding

The research reported in this article formed part of the GIFT project (gifting.digital), which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727040.

ORCID

Anders Sundnes Løvlie http://orcid.org/0000-0003-0484-4668

References

Abdel-Hafez, A., & Xu, Y. (2013). A survey of user modelling in social media websites. *Computer and Information Science*, *6*(4), 59–71. https://doi.org/10.5539/cis.v6n4p59

Almeshari, M., Dowell, J., & Nyhan, J. (2019). Using personas to model museum visitors. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 401–405, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323867

Ames, M. G., Bardzell, J., Bardzell, S., Lindtner, S., Mellis, D. A., & Rosner, D. K. (2014). Making cultures: Empowerment, participation, and democracy - or not? *CHI '14 Extended Abstracts on Human Factors in Computing Systems*, 1087–1092, Toronto, Canada. https://doi.org/10.1145/2559206.2579405

Aoki, P. M., Grinter, R. E., Hurst, A., Szymanski, M. H., Thornton, J. D., & Woodruff, A. (2002). Sotto voce: Exploring the interplay of conversation and mobile audio spaces. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 431–438, Minneapolis, MN. https://doi.org/10.1145/503376.503454

Ardissono, L., Kuflik, T., & Petrelli, D. (2012). Personalization in cultural heritage: The road travelled and the one ahead. *User Modeling and User-Adapted Interaction*, *22*(1–2), 73–99. https://doi.org/10.1007/s11257-011-9104-x

Aron, L. (2001). *A meeting of minds: Mutuality in psychoanalysis*. Routledge. https://www.routledge.com/A-Meeting-of-Minds-Mutuality-in-Psychoanalysis/Aron/p/book/9780881633719

Arora, N., Dreze, X., Ghose, A., Hess, J. D., Iyengar, R., Jing, B., Joshi, Y., Kumar, V., Lurie, N., Neslin, S., Sajeesh, S., Su, M., Syam, N., Thomas, J., & Zhang, Z. J. (2008). Putting one-to-one marketing to work: Personalization, customization, and choice. *Marketing Letters*, *19*(3), 305. https://doi.org/10.1007/s11002-008-9056-z

Back, J., Bedwell, B., Benford, S., Eklund, L., Løvlie, A. S., Preston, W., Rajkowska, P., Ryding, K., Spence, J., Thorn, E.-C., Waern, A., & Wray, T. (2018). GIFT: Hybrid museum experiences through gifting and play. In A. Antoniou & M. Wallace (editors.), *Proceedings of the Workshop on Cultural Informatics co-located with the EUROMED International Conference on Digital Heritage 2018 (EUROMED 2018)* (2235, 31–40). Nicosia, Cyprus: CEUR Workshop Proceedings. http://ceur-ws.org/Vol-2235/paper4.pdf

Bedford, L. (2001). Storytelling: The real work of museums. *Curator: The Museum Journal*, *44*(1), 27–34. https://doi.org/10.1111/j.2151-6952.2001.tb00027.x

Bell, G., Brooke, T., Churchill, E. F., & Paulos, E. (2003). Intimate ubiquitous computing. *Full Workshop Proceedings. Ubicomp* 2003, Seattle, Washington.

Benford, S., Crabtree, A., Reeves, S., Sheridan, J., Dix, A., Flintham, M., & Drozd, A. (2006). The frame of the game: Blurring the boundary between fiction and reality in mobile experiences. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 427–436, Montréal, Québec, Canada. https://doi.org/10.1145/1124772.1124836

Benford, S., Greenhalgh, C., Crabtree, A., Flintham, M., Walker, B., Marshall, J., Koleva, B., Rennick Egglestone, S., Giannachi, G., & Adams, M., others. (2013). Performance-led research in the wild. *ACM Transactions on Computer-Human Interaction (TOCHI)*, *20*(3), 14. https://doi-org.ezproxy.nottingham.ac.uk/10.1145/2491500.2491502

Benford, S., Greenhalgh, C., Giannachi, G., Walker, B., Marshall, J., & Rodden, T. (2012). Uncomfortable interactions. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 2005–2014*, Austin, TX. https://doi.org/10.1145/2207676.2208347

Benford, S., Koleva, B., Preston, W., Angus, A., Thorn, E.-C., & Glover, K. (2018, January 22). *Customizing hybrid products*. CHI 2018, Montreal, QC, Canada. http://eprints.nottingham.ac.uk/50343/

Bonovitz, C. (2009). Looking back, looking forward: A reexamination of benjamin wolstein's interlock and the emergence of intersubjectivity. *The International Journal of Psycho-Analysis*, *90*(3), 463–485. https://doi.org/10.1111/j.1745-8315.2008.00128.x

Bowen, J. P., & Filippini-Fantoni, S. (2004). Personalization and the web from a museum perspective. *Museums and the Web 2004*. Museums and the Web 2004, Toronto, Canada. http://www.museumsandtheweb.com/mw2004/papers/bowen/bowen.html

Bowers, J. (2012). The logic of annotated portfolios: Communicating the value of "research through design." *Proceedings of the Designing Interactive Systems Conference*, 68–77, Newcastle Upon Tyne, UK. https://doi.org/10.1145/2317956.2317968

Camerer, C. (1988). Gifts as economic signals and social symbols. *American Journal of Sociology*, *94*, S180–S214. https://www.jstor.org/stable/2780246

Carroll, J., Howard, S., Vetere, F., Peck, J., & Murphy, J. (2001). Identity, power and fragmentation in cyberspace: Technology appropriation by young people. *ACIS 2001 Proceedings*. https://aisel.aisnet.org/acis2001/6

Castagnos, S., Marchal, F., Bertrand, A., Colle, M., & Mahmoudi, D. (2019). Inferring art preferences from gaze exploration in a museum. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 425–430, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323871

Chan, S., & Cope, A. (2015). Strategies against architecture: interactive media and transformative technology at the cooper hewitt, smithsonian design museum. *Curator: The Museum Journal*, *58*(3), 352–368. https://doi.org/10.1111/cura.12118

Chang, A., Resner, B., Koerner, B., Wang, X., & Ishii, H. (2001). LumiTouch: An emotional communication device. *CHI '01 Extended Abstracts on Human Factors in Computing Systems*, 313–314.

Cheatle, A., & Jackson, S. J. (2015). Digital entanglements: craft, computation and collaboration in fine art furniture production. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 958–968, Vienna, Austria. https://doi.org/10.1145/2675133.2675291

Counts, S., & Fellheimer, E. (2004). Supporting social presence through lightweight photo sharing on and off the desktop. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 599–606, Vancouver BC, Canada.

Dahroug, A., Vlachidis, A., Liapis, A., Bikakis, A., López-Nores, M., Sacco, O., & Pazos-Arias, J. J. (2019). Using dates as contextual information for personalised cultural heritage experiences. *Journal of Information Science*, *47*(1), 82–100. https://doi.org/10.1177/0165551519871823

De Angelis, A., Gasparetti, F., Micarelli, A., & Sansonetti, G. (2017). A social cultural recommender based on linked open data. *Adjunct Publication of the 25th Conference on User Modeling, Adaptation and Personalization*, 329–332, Bratislava, Slovakia. https://doi.org/10.1145/3099023.3099092

Deladiennee, L., & Naudet, Y. (2017). A graph-based semantic recommender system for a reflective and personalised museum visit: Extended abstract. *2017 12th International Workshop on Semantic and Social Media Adaptation and Personalization (SMAP)*, 88–89, Bratislava, Slovakia. https://doi.org/10.1109/SMAP.2017.8022674

Dix, A. (2007). Designing for appropriation. *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI ... but Not as We Know It - Volume 2*, 27–30, University of Lancaster, UK.

Dodge, C. (1997). The bed: A medium for intimate communication. *Extended Abstracts of CHI'97*, 371–372.

Dourish, P. (2001). *Where the action is: The foundations of embodied interaction*. The MIT Press. https://mitpress.mit.edu/books/where-action

Dyck, J., Pinelle, D., Brown, B., & Gutwin, C. (2003). Learning from games: HCI design innovations in entertainment software. *Proceedings of the Graphics Interface 2003 Conference, June 11–13, 2003, Halifax, Nova Scotia, Canada*, 237–246. http://graphicsinterface.org/wp-content/uploads/gi2003-28.pdf

Eklund, L. (2020). A shoe is a shoe is a shoe: Interpersonalization and meaning-making in museums – research findings and design implications. *International Journal of Human-Computer Interaction*, *36*(16), 1503–1513. https://doi.org/10.1080/10447318.2020.1767982

Elster, J. (2000). *Ulysses unbound: Studies in rationality, precommitment, and constraints*. Cambridge University Press. http://www.cambridge.org/mx/academic/subjects/philosophy/political-philosophy/ulysses-unbound-studies-rationality-precommitment-and-constraints

Falk, J. H. (2009). *Identity and the museum visitor experience*. Left Coast Press.

Falk, J. H., & Dierking, L. D. (2012). *The museum experience revisited*. Routledge.

Fishwick, P. (2016). *Deep personalization: A case study of systems thinking within an art museum*. MW2016: Museums and the Web 2016, Los Angeles, CA. http://mw2016.museumsandtheweb.com/paper/learning-systems-thinking-in-the-art-museum-a-semantic-web-culturetechnology-feedback-cycle/

Fosh, L., Benford, S., & Koleva, B. (2016). Supporting group coherence in a museum visit. *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, 1–12, San Francisco, CA. https://doi.org/10.1145/2818048.2819970

Fosh, L., Benford, S., Reeves, S., & Koleva, B. (2014). Gifting personal interpretations in galleries. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 625–634, Toronto, ON. https://doi.org/10.1145/2556288.2557259

Fosh, L., Benford, S., Reeves, S., Koleva, B., & Brundell, P. (2013). 'See Me, feel me, touch me, hear me': Trajectories and interpretation in a sculpture garden. *CHI 2013: Changing Perspectives*, 149–158.

Fosh, L., Lorenz, K., Benford, S., & Koleva, B. (2015). Personal and social? Designing personalised experiences for groups in museums. *MW2015: Museums and the Web 2015*. MW2015: Museums and the Web 2015, Chicago, IL. http://mw2015.museumsandtheweb.com/paper/personal-and-social-designing-personalised-experiences-for-groups-in-museums/

Garrick, B., Pendergast, D., & Geelan, D. (2017). *Theorising personalised education: Electronically mediated higher education*. Springer.

Gaver, B. (2002). Provocative awareness. *Comput. Supported Coop. Work*, Kluwer Academic Publishers, *3* 475–493. https://doi.org/10.1023/A:1021277326673

Gaver, B., & Strong, R. (1996). Feather, scent, and shaker: supporting simple intimacy. *Proceedings of CSCW'96*, *New York, NY, USA*, 16–20.

Gaver, W. (2012). What should we expect from research through design? *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 937–946, Austin, TX. https://doi.org/10.1145/2207676.2208538

Gaver, W. W., Beaver, J., & Benford, S. (2003). *Ambiguity as a resource for design*. *5*, 233–240. https://dl.acm.org/doi/10.1145/642611.642653

Ghorab, M. R., Zhou, D., O'Connor, A., & Wade, V. (2013). Personalised information retrieval: Survey and classification. *User Modeling and User-Adapted Interaction*, *23*(4), 381–443. https://doi.org/10.1007/s11257-012-9124-1

Goodman, E., & Misilim, M. (2003). The sensing beds. *Proceedings of UbiComp, Workshop. UbiComp 2003*, Seattle, Washington.

Goulding, C. (2000). The museum environment and the visitor experience. *European Journal of Marketing*, *34*(3/4), 261-278. https://doi.org/10.1108/03090560010311849

Grivas, K. (2006). Digital selves: Devices for intimate communications between homes. *Personal and Ubiquitous Computing*, *10*(2), 66–76. https://doi.org/10.1007/s00779-005-0003-1

Hsi, S. (2003). A study of user experiences mediated by nomadic web content in a museum. *Journal of Computer Assisted Learning*, *19*(3), 308–319. https://doi.org/10.1046/j.0266-4909.2003.jca_023.x

Hunter, J. (2018, July 31). Personal communication [phone interview].

Johnson, E. 2006. Telling tales. A guide to developing effective storytelling programmes for museums. C. Adler, Ed.. London Museums Hub, Museum of London.

Karpinskyj, S., Zambetta, F., & Cavedon, L. (2014). Video game personalisation techniques: A comprehensive survey. *Entertainment Computing*, *5*(4), 211–218. https://doi.org/10.1016/j.entcom.2014.09.002

Katifori, A., Karvounis, M., Kourtis, V., Kyriakidi, M., Roussou, M., Tsangaris, M., Vayanou, M., Ioannidis, Y., Balet, O., & Prados, T., & others. (2014). CHESS: Personalized storytelling experiences in museums. *International Conference on Interactive Digital Storytelling*, 232–235, Singapore.

Katifori, A., Vayanou, M., Antoniou, A., Ioannidis, I. P., & Ioannidis, Y. (2019). Big five and cultural experiences: Impact from design to evaluation. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 363–369, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323861

Kaye, J. (2006). I just clicked to say I love you: Rich evaluations of minimal communication. *Proceedings of CHI '06 Extended Abstracts on Human Factors in Computing Systems*, 363–368, Montréal, Canada.

Kaye, J., Levitt, M. K., Nevins, J., Golden, J., & Schmidt, V. (2005). Communicating intimacy one bit at a time. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2005)*, 1529–1532, Portland, OR.

Kontiza, K., Loboda, O., Deladiennee, L., Castagnos, S., & Naudet, Y. (2018, September). A museum app to trigger users' reflection. *International Workshop on Mobile Access to Cultural Heritage (MobileCH2018)*, Barcelona, Spain. https://hal.archives-ouvertes.fr/hal–02471994

Kuflik, T., Stock, O., Zancanaro, M., Gorfinkel, A., Jbara, S., Kats, S., Sheidin, J., & Kashtan, N. (2011). A visitor's guide in an active museum: Presentations, communications, and reflection. *Journal on Computing and Cultural Heritage (JOCCH)*, *3*(3), 1–11:25. https://doi.org/10.1145/1921614.1921618

Lawler, E. J., & Yoon, J. (1993). Power and the emergence of commitment behavior in negotiated exchange. *American Sociological Review*, *58*(4), 465–481. http://www.jstor.org/stable/2096071

Lee, J., Bagheri, B., & Kao, H.-A. (2015). A cyber-physical systems architecture for industry 4.0-based manufacturing systems. *Manufacturing Letters*, *3*, 18–23. https://doi.org/10.1016/j.mfglet.2014.12.001

Lee, J., & Paddon, M. (2017). *Creating the smart museum: The intersection of digital strategy, kiosks and mobile*. MW17: Museums and the Web 2017, Cleveland, OH. https://mw17.mwconf.org/paper/creating-the-smart-museum-the-intersection-of-digital-kiosks-web-and-native-mobile/

Løvlie, A. S., Benford, S., Spence, J., Wray, T., Mortensen, C. H., Olesen, A., Rogberg, L., Bedwell, B., Darzentas, D., & Waern, A. (2019, April). The GIFT framework: Give visitors the tools to tell their own stories. *Museums and the Web 2019*. Museums and the Web 2019, Boston, MA, USA. https://mw19.mwconf.org/paper/the-gift-framework-give-visitors-the-tools-to-tell-their-own-stories/

Lykourentzou, I., Claude, X., Naudet, Y., Tobias, E., Antoniou, A., Lepouras, G., & Vassilakis, C. (2013). Improving museum visitors' quality of experience through intelligent recommendations: A visiting style-based approach. *Intelligent Environments*, 17. https://doi.org/10.3233/978-1-61499-286-8-507

Lynch, C. (2000, January 1). From automation to transformation: forty years of libraries and information technology in higher education. *EDUCAUSE Review*, 60–68.

Lyons, L. (2009). Designing opportunistic user interfaces to support a collaborative museum exhibit. *Proceedings of the 9th International Conference on Computer Supported Collaborative Learning - Volume 1*, 375–384, Rhodes, Greece.

Mackay, W. E. (1991). Triggers and barriers to customizing software. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 153–160, New Orleans, LA. https://doi.org/10.1145/108844.108867

Makri, S., & Blandford, A. (2011). What is serendipity? – A workshop report. *Information Research*, *16*(3), 3. http://InformationR.net/ir/16-3/paper491.html

Markopoulos, P., Romero, N., von Baren, J., Ijsselsteijn, W. A., de Ruyter, B., & Farshchian, B. A. (2004). Keeping in touch with the family: Home and away with the ASTRA awareness system. *Extended Abstracts on Human Factors in Computing Systems*, 1351–1354, Vienna, Austria.

Marshall, M. T., Dulake, N., Petrelli, D., & Kockelkorn, H. (2015). From the deposit to the exhibit floor: An exploration on giving museum objects personality and social life. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems*, 1917–1922, Seoul, Korea. https://doi.org/10.1145/2702613.2732872

Mathews, H. (1997). Translation and the oulipo: The case of the persevering maltese. *Electronic Book Review*. http://electronicbookreview.com/essay/translation-and-the-oulipo-the-case-of-the-persevering-maltese/

Mauro, N. (2019). Supporting the exploration of cultural heritage information via search behavior analysis. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 371–376, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323862

McCarthy, J., Wright, P., Wallace, J., & Dearden, A. (2006). The experience of enchantment in human–computer interaction. *Pers Ubiquit Comput*, *10*, 369–378. https://link.springer.com/article/10.1007%2Fs00779-005-0055-2

McManus, P. (1989). What people say and how they think in a science museum. In D. L. Uzzell (Ed.), *Heritage interpretation* (Vol. 2, pp. 156–165). Bellhaven Press.

Mokatren, M., Bogina, V., Wecker, A., & Kuflik, T. (2019). A museum visitors classification based on behavioral and demographic features. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 383–386, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323864

Mueller, F., Vetere, F., Gibbs, M. R., Kjeldskov, J., Pedell, S., & Howard, S. (2005). Hug over a distance. *CHI '05 Extended Abstracts on Human Factors in Computing Systems*, 1673–1676, Portland, OR.

Nielsen, J. K. (2017). Museum communication and storytelling: Articulating understandings within the museum structure. *Museum Management and Curatorship*, *32*(5), 440–455. https://doi.org/10.1080/09647775.2017.1284019

Not, E., & Petrelli, D. (2019). Empowering cultural heritage professionals with tools for authoring and deploying personalised visitor experiences. *User Modeling and User-Adapted Interaction*, *29*(1), 67–120. https://doi.org/10.1007/s11257-019-09224-9

Not, E., Zancanaro, M., Marshall, M. T., Petrelli, D., & Pisetti, A. (2017). Writing postcards from the museum: Composing personalised tangible souvenirs. *Proceedings of the 12th Biannual Conference on Italian SIGCHI Chapter*, 1–9, Cagliari, Italy. https://doi.org/10.1145/3125571.3125583

Oberlander, J., O'Donnell, M., Mellish, C., & Knott, A. (1998). Conversation in the museum: Experiments in dynamic hypermedia with the intelligent labelling explorer. *New Review of Hypermedia and Multimedia*, *4*(1), 11–32. https://doi.org/10.1080/13614569808914693

Oomen-Early, J., Bold, M., Wiginton, K. L., Gallien, T. L., & Anderson, N. (2008). Using asynchronous audio communication (AAC) in the online classroom: A comparative study. *MERLOT Journal of Online Learning and Teaching*, *4*(3), 267–276. https://jolt.merlot.org/vol4no3/oomen-early_0908.pdf

Parry, R. (2010). *Museums in a digital age*. Routledge.

Paterno, F., & Mancini, C. (1999). *Designing web user interfaces adaptable to different types of use*. Museums and the Web, Pittsburgh, PA. http://www.archimuse.com/mw99/papers/paterno/paterno.html

Rettberg, S. (2005). All together now: Collective knowledge, collective narratives, and architectures of participation. *Digital Arts and Culture Conference*, Copenhagen, Denmark.

Richins, M. L. (1994). Valuing things: The public and private meanings of possessions. *Journal of Consumer Research*, *21*(3), 504. https://doi.org/10.1086/209414

Rogers, Y., & Marshall, P. (2017). Research in the wild. *Synthesis Lectures on Human-Centered Informatics*, *10*(3), i–97. https://doi.org/10.2200/S00764ED1V01Y201703HCI037

Rosner, D. K., & Ryokai, K. (2009). Reflections on craft: Probing the creative process of everyday knitters. *Proceedings of the Seventh ACM Conference on Creativity and Cognition*, 195–204, Berkeley, CA. https://doi.org/10.1145/1640233.1640264

Ruth, J. A., Otnes, C. C., & Brunel, F. F. (1999). Gift receipt and the reformulation of interpersonal relationships. *Journal of Consumer Research*, *25*(4), 385–402. https://doi.org/10.1086/209546

Ryding, K. (2020). The silent conversation: Designing for introspection and social play in art museums. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–10, Honolulu, HI. https://doi.org/10.1145/3313831.3376357

Ryding, K., & Fritsch, J. (2020). Play design as a relational strategy to intensify affective encounters in the art museum. *Proceedings of the 2020 ACM on Designing Interactive Systems Conference*, 681–693, Eindhoven, The Netherlands. https://doi.org/10.1145/3357236.3395431

Sadowski, H. (2016). *Digital intimacies: Doing digital media differently* [PhD Thesis Linköping University]. Linköping: Linköping University Electronic Press. http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva–132634

Sansonetti, G., Gasparetti, F., & Micarelli, A. (2019). Cross-domain recommendation for enhancing cultural heritage experience. *Adjunct Publication of the 27th Conference on User Modeling, Adaptation and Personalization*, 413–415, Larnaca, Cyprus. https://doi.org/10.1145/3314183.3323869

Schiphorst, T., Nack, F., KauwATjoe, M., de Bakker, S., Stock, A., Rosillio, L., Schut, A. P., & Jaffe, N. (2007). PillowTalk: Can we afford intimacy? *Proceedings of the 1st International Conference on Tangible and Embedded Interaction*, 23–30, Baton Rouge, LA. https://doi.org/10.1145/1226969.1226975

Schnädelbach, H., Rennick Egglestone, S., Reeves, S., Benford, S., Walker, B., & Wright, M. (2008). Performing thrill: Designing telemetry systems and spectator interfaces for amusement rides. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1167–1176, Florence, Italy. https://doi.org/10.1145/1357054.1357238

Sengers, P., & Gaver, B. (2006). Staying open to interpretation: Engaging multiple meanings in design and evaluation. *Proceedings of the 6th Conference on Designing Interactive Systems*, 99–108, University Park, PA. https://doi.org/10.1145/1142405.1142422

Sheridan, J. G., Bryan-Kinns, N., & Bayliss, A. (2007). Encouraging witting participation and performance in digital live art. *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI … but Not as We Know It - Volume 1*, 13–23, Lancaster, UK.

Sherry, J. F. (1983). Gift giving in anthropological perspective. *Journal of Consumer Research*, *10*(2), 157–168. https://doi.org/10.1086/208956

Sherry, J. F., McGrath, M. A., & Levy, S. J. (1993). The dark side of the gift. *Journal of Business Research*, *28*(3), 225–244. https://doi.org/10.1016/0148-2963(93)90049-U

Simon, N. (2010). *The participatory museum*. Museum 2.0. http://www.participatorymuseum.org/

Spence, J. (2019). Inalienability: Understanding digital gifts. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–657, Glasgow, Scotland. https://doi.org/10.1145/3290605.3300887

Spence, J., Bedwell, B., Coleman, M., Benford, S., Koleva, B. N., Adams, M., Farr, J. R., Tandavanitj, N., & Løvlie, A. S. (2019). Seeing with new eyes: Designing for in-the-wild museum gifting. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2019). CHI 2019*, Glasgow, Scotland, UK. https://doi.org/10.1145/3290605.3300235

Spence, J., Hazzard, A., McGrath, S., Greenhalgh, C., & Benford, S. (2017). The rough mile: Testing a framework of immersive practice. *Proceedings of the 2017 Conference on Designing Interactive Systems*, 877–888, Edinburgh, UK. https://doi.org/10.1145/3064663.3064756

Steichen, B., Ashman, H., & Wade, V. (2012). A comparative survey of personalised information retrieval and adaptive hypermedia techniques. *Information Processing & Management*, *48*(4), 698–724. https://doi.org/10.1016/j.ipm.2011.12.004

Stock, O., Carenini, G., Cecconi, F., Franconi, E., Lavelli, A., Magnini, B., Pianesi, F., Ponzi, M., Samek-Lodovici, V., & Strapparava, C. (1993).

ALFRESCO: Enjoying The combination of NLP and hypermedia for information exploration. *In AAAI Workshop on Intelligent Multimedia Interfaces*, 197–224.

Sunar, A. S., Abdullah, N. A., White, S., & Davis, H. (2016). Personalisation in MOOCs: A critical literature review. In S. Zvacek, M. T. Restivo, J. Uhomoibhi, & M. Helfert (Eds.), *Computer supported education* (pp. 152–168). Springer International Publishing. https://doi.org/10.1007/978-3-319-29585-5_9

Sundar, S. S., & Marathe, S. S. (2010). Personalization versus customization: The importance of agency, privacy, and power usage. *Human Communication Research*, *36*(3), 298–322. https://doi.org/10.1111/j.1468-2958.2010.01377.x

Sunwolf, J. D. (2006). The shadow side of social gift-giving: Miscommunication and failed gifts. *Communication Research Trends*, *25* (3), 1–20. http://cscc.scu.edu/trends/v25/v25_3.pdf

Tandavanitj, N. (2019, July 5). Personal communication [phone interview].

Tollmar, K., Junestrand, S., & Torgny, O. (2000). Virtually living together: A design framework for new communication media. *In Proceedings of the 3rd Conference on Designing Interactive Systems*, 83–91, New York City, NY.

Tolmie, P., Benford, S., Flintham, M., Brundell, P., Adams, M., Tandavantij, N., Row Far, J., & Giannachi, G. (2012). "Act natural": Instructions, compliance and accountability in ambulatory experiences. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 1519–1528, Austin, TX. https://doi.org/10.1145/2207676.2208616

Tsaknaki, V., Fernaeus, Y., & Schaub, M. (2014). Leather as a material for crafting interactive and physical artifacts. *Proceedings of the 2014 Conference on Designing Interactive Systems*, 5–14, Vancouver BC, Canada. https://doi.org/10.1145/2598510.2598574

van Tuijn, E., Drost, K., Brinkerink, M., & Baltussen, L. B. (2016). *Open is as open does. How to use open content in a personalized interactive museum exhibit | MW2016: Museums and the Web 2016*. http://mw2016.museumsandtheweb.com/paper/open-is-as-open-does-how-to-use-open-content-in-an-interactive-museum-exhibit/

Vayanou, M., Antoniou, A., Loumos, G., Kargas, A., Kakaletris, G., & Ioannidis, Y. (2019). Towards personalized group play in gallery environments. *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*, 739–746, Barcelona, Spain. https://doi.org/10.1145/3341215.3356313

Vayanou, M., Karvounis, M., Katifori, A., Kyriakidi, M., Roussou, M., & Ioannidis, Y. E. (2014). The CHESS project: Adaptive personalized storytelling experiences in museums. *UMAP Workshops*, Aalborg, Denmark.

Waern, A., & Løvlie, A. S. (eds). (in press). *Hybrid Museum Experiences: Theory and Practice*. Amsterdam University Press.

Wallace, J., Thieme, A., Wood, G., Schofield, G., & Olivier, P. (2012). Enabling self, intimacy and a sense of home in dementia. *Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems*, 2629–2638, Austin, Texas. https://doi.org/10.1145/2207676.2208654

Walter, T. (1996). From museum to morgue? Electronic guides in roman bath. *Tourism Management*, *17*(4), 241–245. https://doi.org/10.1016/0261-5177(96)00015-5

Weiner, A. B. (1992). *Inalienable possessions: The paradox of keeping-while giving*. University of California Press; JSTOR. https://www.jstor.org/stable/10.1525/j.ctt1ppcbw

Wessel, D., & Mayr, E. (2007). Potentials and challenges of mobile media in museums. *International Journal of Interactive Mobile Technologies (IJIM)*, *1* (1), 1. http://journals.sfu.ca/onlinejour/index.php/i-jim/article/view/165

Wilson, A. (2016). The Infrastructure of Intimacy. *Signs: Journal of Women in Culture and Society*, *41*(2), 247–280. https://doi.org/10.1086/682919

Wong, A. (2015). *The whole story, and then some: 'Digital storytelling' in evolving museum practice*. MW2015: Museums and the Web 2015, Chicago, IL. https://mw2015.museumsandtheweb.com/paper/the-whole-story-and-then-some-digital-storytelling-in-evolving-museum-practice/

Wright, P., Wallace, J., & McCarthy, J. (2008). Aesthetics and experience-centered design. *ACM Transactions on Computer-Human Interaction (TOCHI)*, *15*(4), 1–21. https://doi.org/10.1145/1460355.1460360

Ziff, B. H., & Rao, P. V. (1997). *Borrowed power: Essays on cultural appropriation*. Rutgers University Press.

Zimmerman, J., Forlizzi, J., & Evenson, S. (2007). Research through design as a method for interaction design research in HCI. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 493–502, San Jose, CA. https://doi.org/10.1145/1240624.1240704

About the Authors

Karin Ryding PhD Fellow, Digital Design Department, IT University of Copenhagen. Karin's research interest includes critical play, game design, and cultural heritage. She holds an MA in Visual Culture Studies and a BA in Game Design. Outside of her research career, Karin has worked as a professional game designer.

Jocelyn Spence Research Fellow, Mixed Reality Lab, University of Nottingham. Jocelyn is an HCI and design researcher working at the intersection of performance and human–technological interaction. Her research focuses on conversational storytelling, gifting, and museum-based interactions aiming for meaningful engagement. She also works in design fiction and ethics.

Anders Sundnes Løvlie Associate Professor, Digital Design Department, IT University of Copenhagen. Anders works on the intersection of design and media studies, focusing on experience design, locative media, journalism and play. He was the coordinator for the GIFT project and leads the research group on Media, Art and Design (MAD).

Steve Benford Dunford Professor of Computer Science, Mixed Reality Lab, University of Nottingham. Steve's research explores how digital technologies, and foundational concepts and methods to underpin these, can support cultural and creative experiences including new forms of museum performance. He is currently directing the Horizon Centre for Doctoral Training.

Paper 5:

Play Design as a Relational Strategy to Intensify Affective Encounters in the Art Museum.

Ryding, K. & Fritsch, J.

Published in:
In Proceedings of the 2020 Conference on Designing Interactive Systems (DIS'20). ACM, 681–693.

Play Design as a Relational Strategy to Intensify Affective Encounters in the Art Museum

Karin Ryding
Digital Design Department
IT University of Copenhagen
Rued Langgaards Vej 7,
Copenhagen 2300, DK
kary@itu.dk

Jonas Fritsch
Digital Design Department
IT University of Copenhagen
Rued Langgaards Vej 7,
Copenhagen 2300, DK
frit@itu.dk

ABSTRACT

This paper presents an exploration of play design as a relational strategy to intensify affective encounters during an art museum visit. Theoretically, the paper presents a foundation emphasising the relational aspects of designing playful museum experiences. Based on a detailed and contextual analysis of a mobile web app entitled 'Never let me go', designed to be used in art museums, we show how the app and infrastructure catalysed affective encounters and put the relations between the players, the architecture and the exhibited artworks into motion. In our analysis, we highlight four ways through which the players' experiences were intensified. Finally, we discuss the potential and concerns arising from working with relational play strategies in the design of affectively engaging museum experiences, emphasising emergence, intimacy, ambiguity and trust as key elements.

Author Keywords

Play design, relationality, affect, intimacy, ambiguity, emergence, encounters, museum

CCS Concepts

• **Human-centered computing→ User centered design**; *Empirical studies in interaction design*

INTRODUCTION

Within the field of interaction design and HCI, the application of new technology in museums has drawn many researchers' attention since the 1990s [12]. This research has covered a broad range of aspects such as information delivery [36,59,72,75], participation [13,15,16] and embodied interactive experiences [61,76]. In the last few years, an increasing amount of work is being done on the emotional enhancement of a museum visit [10,26,37], as well as on museum experiences that foster personal and social connections [25,69]. These efforts go hand in hand with an increasing interest within the museum world in affect and the role of emotions [68]. At the core of this development, we find fundamental questions about the complex relationships between museums, visitors and cultural objects [20]. Museums are complex cultural institutions [48], in which the relationships between material objects, technology and systems of "*ideology, narrative, aesthetics and flesh*" [2:xii] are intensified. One of the most critical functions of museums is in fact to make us reflect on and affectively experience these entanglements. To put relational perspectives at the forefront when designing museum experiences is thus becoming increasingly important.

In this paper we contribute to this development by focusing on play design as a *relational design strategy* highly relevant to the design of museum experiences. We present a study in which performative artistic methods were used in combination with playful technology to intensify affective encounters in an art museum. Play is here seen as a certain relational approach to the world – a form of 'worlding' which is described by Helen Palmer and Vicky Hunter as,

> A turning of attention to a certain experience, place or encounter and our active engagement with the materiality and context in which events and interactions occur. It is above all an embodied and enacted process – a way of being in the world - consisting of an individual's whole-person act of attending to the world. [57]

Playing in intimate connection with someone, or something, becomes an active process of what Haraway calls "sympoiesis", or *worlding-with* [19]. The idea of intensifying the relational aspect of the museum visit to the point where sympoiesis would not just become inevitable but even quite palpable (in the form of arising pleasures and tensions), was one of the main motivations driving the development of 'Never let me go'; a two-player system allowing visitors to playfully guide a companion through the museum [62].

In this paper, we present the field trial of 'Never let me go' at the National Gallery of Denmark. We scrutinise the data from the perspectives of relationality and affect, focusing on how participants describe and make meaning out of the emerging intensities of the play experience. We end with a discussion on the potential and concerns arising from working with play

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.
DIS '20, July 6–10, 2020, Eindhoven, Netherlands
© 2020 Copyright is held by the owner/author(s). Publication rights licensed to ACM.
ACM ISBN 978-1-4503-6974-9/20/07…$15.00
https://doi.org/10.1145/3357236.3395431

design as a relational strategy for catalysing affective encounters in museums. Considering the findings, we put forward the relationship between players, as well as emergence, intimacy, ambiguity and trust as key qualities to take into account when designing affectively engaging interactive museum experiences.

RELATED WORK

In this section, we present a body of work connecting work on affective and relational approaches to HCI, interaction design, play design and museum experiences. In so doing, we both aim to highlight themes cutting across all areas, while at the same time presenting a joint conceptual foundation for the present paper.

Affect, Intensity and Relationality in HCI and Design

Affective and emotional aspects of interacting and living with digital technologies has been under much scrutiny in Human-Computer Interaction (HCI) and interaction design for more than two decades. Affective Computing was coined by Picard in 1997 as a research agenda for making computers better at displaying and recognizing motions [60] and Emotional Design [55] has emphasized that understanding affective and visceral attachments to product design must be a central aspect of a product's success or failure. These approaches, however, have been criticized for attempting to structure, formalize, and represent emotions and affect as 'informational' units in a cognitivist perspective [1,9]. A range of design researchers have instead proposed an 'interactional' approach to affect, arguing that emotions and affect are in the affective interaction between a user and a system, and not to be found in the code or hardware (see e.g., [9,42,65]). Here, affect and emotion are seen as essential for unfolding the richness and complexity of human experience in interactive systems design more broadly.

In critical and cultural theory, there has also been a so-called 'Affective Turn' aimed at cultivating, among other things, the impact on a non-cognitive and bio-social level of new media and technologies on our possibilities of experience [7,14,34,47,51,64]. Affect "*arises in the midst of in-betweenness*" as "*those intensities that pass body to body (human, nonhuman, part-body and otherwise*" [34:1]. Building on Spinoza, Brian Massumi has suggested that affect accounts for the pre/non-conscious dimensions of experience felt as transitions in our capacity to act; positive affect is characterized by the ability to affect and be affected, negative affect as the inability to act or be acted upon [51,70]. Massumi further emphasizes that starting in-between means starting in *"a region of relation.*" [53:2]. Here we also find a reference to William James' radical empiricism, where relations are said to have the same ontological status as the particulars being related [45]. Changes in relations are felt as changes in affective intensity constituting proper affective encounters or encounters with affect [3].

Bringing these insights back to design, Fritsch has proposed an affect-driven and relational account of design aimed at fostering conditions of emergence towards affectively engaging encounters between people and technology [27]. Under the heading of Affective Interaction Design, it has further been suggested that affect is central for linking the micro-interactional and macro-relational for changes in affective attachments [28]. Here, affect is understood as an in-between, relational and more-than-human concept whose intensity ultimately colours our engagement with ourselves, each other and the world, which will be the conceptual starting point in this paper.

Play as a Catalyst for Affect

Instead of trying to define play (which has proven to be a tricky matter) theorists often provide lists of essential qualities, characteristics or traits of play. Most commonly, it is described as unproductive, free and voluntary, uncertain, separate, make-believe and governed by rules [11,43]. It is also often emphasised that play is intrinsically motivated [33] and driven by curiosity [38]. A unique experiential quality of play is that it gives us agency to explore and create new forms of agency [67]. In this sense, play is a very specific mode in which to relate to the world. It involves a both assertive and inquiring stance toward things around us, our bodies, abstract ideas, feelings or whatever we chose to play with, leading to reimaginings, creation as well as destruction. Through play we get exposed to the unexpected and the in-between dimension of experience (c.f. [2]). Importantly, as a consequence, this is how play makes transformation possible, however small it may be [33,40].

Because play frequently invokes people's abilities to respond to unanticipated and unpredictable situations, it is often emotionally charged and expressive [39]. According to Sutton-Smith, play can "*give rise to the pleasurable effects of excitement and optimism*" [73:253]. If we take a closer look at play experiences, we find transitions from one pattern of awareness to another [21,39]. According to Eberle, play leads from "anticipation" to "surprise" to "pleasure" to "strength" and "poise", and back again in a spiralling movement [21]. By putting our inner states into motion, play increases the level of intensity we are experiencing. Play can empower people by expanding and consolidating their feelings about what they can be and do. Afterwards, when the activity is concluded, there is often a feeling of gratification [39]. This view on play as empowering and affective is confirmed by Isbister in her work on digital games where she shows the benefits that social, co-located, and physical play can have on people's emotions [44].

From a design perspective, Bertran, Segura & Isbister have recently elaborated on how playful technology can enrich everyday activities outside leisure with socio-emotional value [6]. They outline a design space of "Technology for Situated and Emergent Play", which is fruitful in order to a) add joy to mundane situations; b) afford agency to explore, create and reflect; and c) facilitate meaningful social connections [6:10]. In this paper, we build on these ideas and elaborate on them further by putting emphasis on the relational qualities of play and how it enables us to explore the intensities of the world.

Affective Learning and Playful Technology in Museums

Historically, museums have been dominated by a "pedagogy of walking", signifying linear narratives appealing to rational ways of thinking and the strict use of vision as a sensorial tool [5]. As a critical response to this traditional form of pedagogy, Witcomb [78,79] is advocating a "pedagogy of feeling" for museums in which "*nonrational forms of knowledge, ones based on other bodily sensations and on emotional forms of intelligence*" [78:58] are being foregrounded. These perspectives on affective learning in museums are currently under much discussion (c.f. [54]).

Smith, Wetherell and Campbell point out a need to explore different meaning-making processes as well as patterns of identity and affiliation in relation to affective museum experiences [68]. They suggest the study of "affective practices", which implies the application of practice theories from social sciences in combination with affect theory [77].

The study of digital technology with the purpose of emotionally enhancing experiences in museum and heritage contexts is currently an active research area (ex. [58]). Within HCI, examples of such projects are "See Me, Feel Me, Touch Me, Hear Me" in which mobile technology was used to emotionally enhance a visit to a sculpture garden [26] and "Affective Presence" in which ambient displays in museums were used to augment experiences of affective presence [10]. Other examples include: [16,37,69].

Playful technology in museums, on the other hand, is most often associated with applications for learning which take the form of scavenger hunts [4,80] or role-playing [56]. A different design approach, more relevant to our work, is taken by Vayanou et al. exploring generic storytelling games for art museums [74]. Although interesting work is being done in the area of museums and playful technology (ex. [76]), we believe that the socio-emotional value of play as well as its relational qualities are not yet fully explored in the contexts of museums and cultural heritage.

To conclude, we see many overlaps between the conceptual development across the fields of HCI/interaction design, play design and museum design, where the affective and relational play a key role – both when it comes to understanding and analysing, and when it comes to developing actual design strategies. In the following, we present a case that both activates the analytic and design-oriented dimensions of these concepts in relation to the mobile web app 'Never let me go'. We start out by outlining the motivations behind the design and the context in which it was conceived. Then we move on to a detailed description of the app in its final version, followed by the evaluation and its results.

CASE: DESIGNING FOR THE ART MUSEUM

The work presented here was carried out as part of the GIFT project which ended in 2019. The project had the aim to help museums overcome some of the challenges involved in using digital technology to facilitate engaging visitor experiences [81]. It was a highly cross-disciplinary project combining HCI research, artist-led exploration, technology experiments, and experience design in collaboration with museums. Motivated by the overall challenge to develop new ways in which visitors may experience personal encounters with cultural heritage, the idea behind 'Never let me go' was to design a generic mobile app which could be used in any large to mid-size art museum, gallery or sculpture park.

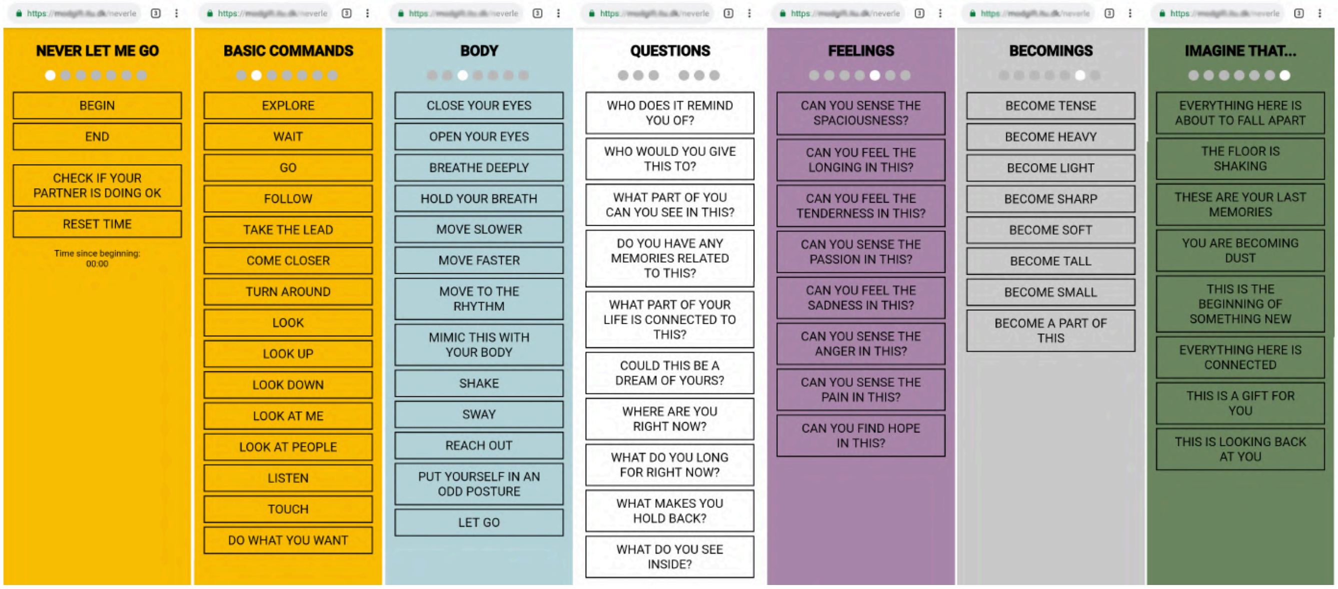
One of the main sources of inspiration behind the design came from work done within performance art and experimental theatre where actors and performers use their voice to give instructions or tell a story with the specific purpose to manipulate or influence participants' perception of specific objects, environments or situations (ex. [8,12,24,41,46]). These works, in different ways, play with authority, agency and intimacy by blurring the boundaries between audience and performers. They transport the participants/audience into a performative space [23] where new things feel possible and the effect can be both enchanting and unsettling. The artistic strategy of "making strange", or defamiliarizing, is often used in this way to remove the automatism of perception and open up for changes in perspective [17,50].

The overall idea was to employ performative strategies, such as the intimate voice, defamiliarization, and altered forms of agency, and to put them into a playful context. Since these methods are already present in different forms of play, it would make it easy for the players to accept and make use of them. Moreover, it would take advantage of the power to change someone's perspective and integrate this into naturally emergent and situated experiences where the social dynamics between the participants would play a crucial role in the affective engagements as well as in the sense-making processes taking place during the museum visit.

Never Let Me Go

'Never let me go' was designed as a two-player experience. It let the players take the roles of an Avatar and a Controller (Figure 2). The idea behind the two roles was to let one player be in charge of the other player's experience, in real time, in the museum. The prototype was designed as two interconnected web apps, but it was only the Controller app that provided interaction. The Controller interface consisted of a menu with different commands, questions or instructions that could be sent to the Avatar (Figure 1), who would receive them as pre-recorded voice messages. Both roles had a shared audio feed in order for the Controller to closely follow how the experience was playing out for the Avatar. The shared audio was also used to emphasise intimacy and create a shared space where the two participants would feel safe together.

In the Controller app, there were six different categories to choose from in the menu. They served different purposes here briefly explained:



NEVER LET ME GO

BEGIN
END
CHECK IF YOUR PARTNER IS DOING OK
RESET TIME
Time since beginning: 00:00

BASIC COMMANDS

EXPLORE
WAIT
GO
FOLLOW
TAKE THE LEAD
COME CLOSER
TURN AROUND
LOOK
LOOK UP
LOOK DOWN
LOOK AT ME
LOOK AT PEOPLE
LISTEN
TOUCH
DO WHAT YOU WANT

BODY

CLOSE YOUR EYES
OPEN YOUR EYES
BREATHE DEEPLY
HOLD YOUR BREATH
MOVE SLOWER
MOVE FASTER
MOVE TO THE RHYTHM
MIMIC THIS WITH YOUR BODY
SHAKE
SWAY
REACH OUT
PUT YOURSELF IN AN ODD POSTURE
LET GO

QUESTIONS

WHO DOES IT REMIND YOU OF?
WHO WOULD YOU GIVE THIS TO?
WHAT PART OF YOU CAN YOU SEE IN THIS?
DO YOU HAVE ANY MEMORIES RELATED TO THIS?
WHAT PART OF YOUR LIFE IS CONNECTED TO THIS?
COULD THIS BE A DREAM OF YOURS?
WHERE ARE YOU RIGHT NOW?
WHAT DO YOU LONG FOR RIGHT NOW?
WHAT MAKES YOU HOLD BACK?
WHAT DO YOU SEE INSIDE?

FEELINGS

CAN YOU SENSE THE SPACIOUSNESS?
CAN YOU FEEL THE LONGING IN THIS?
CAN YOU FEEL THE TENDERNESS IN THIS?
CAN YOU SENSE THE PASSION IN THIS?
CAN YOU FEEL THE SADNESS IN THIS?
CAN YOU SENSE THE ANGER IN THIS?
CAN YOU SENSE THE PAIN IN THIS?
CAN YOU FIND HOPE IN THIS?

BECOMINGS

BECOME TENSE
BECOME HEAVY
BECOME LIGHT
BECOME SHARP
BECOME SOFT
BECOME TALL
BECOME SMALL
BECOME A PART OF THIS

IMAGINE THAT...

EVERYTHING HERE IS ABOUT TO FALL APART
THE FLOOR IS SHAKING
THESE ARE YOUR LAST MEMORIES
YOU ARE BECOMING DUST
THIS IS THE BEGINNING OF SOMETHING NEW
EVERYTHING HERE IS CONNECTED
THIS IS A GIFT FOR YOU
THIS IS LOOKING BACK AT YOU

Figure 1. Screenshots from the Controller app.

The first category called ‘Basic commands’ consisted of direct prompts such as “Explore”, “Follow”, and “Wait”. It had the purpose to facilitate movement and exploration of the museums and its exhibitions. The second was called ‘Body’ and consisted of instructions relating to the body of the Avatar, such as “Close your eyes”, “Breathe deeply” or “Mimic this with your body”. This was included to encourage the participants to play with their physical presence and their senses in the museum. The third category consisted of personal questions that could be used in relation to the art, for example “What part of your life is connected to this?” and “Who would you give this to?”. The idea behind this category was to encourage personal reflections and emotional connections with the artwork. The fourth category was called ‘Becomings’ and consisted of prompts that were very open for interpretation. Examples were “Become light”, “Become sharp” and “Become part of this”. Even more than the ‘Body’ category these prompts were included for participants to play with new ways of being in the museum and to explore more embodied experiences of art. The fifth category was ‘Feelings’ which consisted of questions again to be related to the artworks, but this time in order to direct the Avatar’s attention to the emotional content of an art piece. Examples were “Can you feel the longing in this?” or “Can you sense the pain in this?”. Lastly, there was a category called ‘Imagine that’. This consisted of instructions intended to trigger the Avatar’s imagination. The idea was both to facilitate narrative play and to induce a sense of urgency in order to intensify the Avatar’s experience. Examples of this category were “Imagine that everything here is about to fall apart” and “Imagine that this is looking back at you”. Apart from the categories described, there were a ‘Begin’ and an ‘End’ option in the menu. These would trigger longer voice recordings of instructions, both for the Avatar and the Controller. In the case of the Avatar, the instructions included a suggestion that whenever in doubt about what to do, they should just relax and enjoy the art.

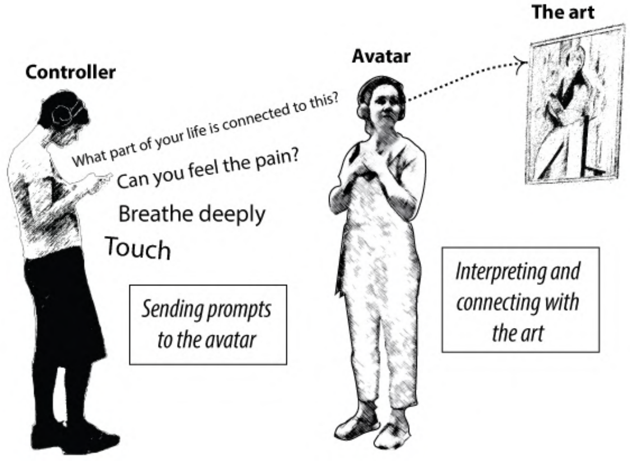

The art
Avatar
Controller
What part of your life is connected to this?
Can you feel the pain?
Breathe deeply
Touch
Sending prompts to the avatar
Interpreting and connecting with the art

Figure 2. Never let me go: a two-player system.

EVALUATION

One of the main purposes of evaluating ‘Never let me go’ was to find out how participants would interact with the system, the exhibition space and each other during play. However, perhaps even more importantly, the intention was to get an insight into the experience from the players’ point of view. Would it feel more or less intense, embodied and emotional? Would it involve deeper or more superficial encounters with the artwork and the architecture? Would the existing relationship between the two players make any difference in the experience? Because qualitative methods are useful in order to answer this type of questions from the standpoint of the participant [35], this approach was chosen for the study.

Trialling Never Let Me Go

During the design process early iterations of the app were tested at three different art museums in Copenhagen with 6 users in total. After each test the prompts would be evaluated. The ones that did not work well would be removed and new prompts would be added according to what the participants felt was lacking.

The main trial of 'Never let me go' was conducted between April 22 and May 2, 2019 at the National Gallery of Denmark. 20 people took part in the trial. Of these 20, 14 were female; 6 were male; 8 were aged 23 – 30; 6 were aged 31 – 38; and 6 were aged 39 - 46. 6 out of the 10 pairs were romantic couples; 1 pair were siblings; 2 were friends and 1 pair had just met for the first time. All were recruited beforehand through public invitations on social media, and from a mailing list for people interested in cultural experiences in the Copenhagen area. In total, there were people of 13 different nationalities (mostly European) taking part in the study.

Each test was separated into 4 different sessions, approximately 10 minutes long. After a session ended, the participants would swap roles. Thus, they would try out both the Avatar role and the Controller role twice each. Before they started, they were given a mobile device each and a set of over-ear headphones. They could choose where in the museum to start the experience. Most often this would be in the modern art section. The Controllers were instructed to press 'Begin' when they felt ready to start. No training was provided beforehand. Brian Eno's ambient soundtrack: 'Music for Airports' was used as background music during half of the test sessions.

During the test the participants were observed and photographed (with consent given beforehand) by a researcher, and afterwards semi-structured interviews were carried out with them in pairs. The observing researcher took notes continuously of what the participants were doing and at what time. Photographs were taken to supplement the field notes and to contribute to the overall impression of the trial. The interviews (each between 30-40 minutes long) were recorded, transcribed and analysed through a process of inductive content analysis [22]. The themes that came out of the analysis were based on an iterative coding process where meaning units were identified, labelled, and put into 10 different categories.

RESULTS

The study reveals that playing 'Never let me go' had a strong effect on the participants' experiences during their time in the art museum. In general, it made them feel more open and stimulated than usual. Playing together gave them the opportunity to explore and reflect upon their existing relationship to each other. This relational activation, with all the intimacy, emergence and ambiguity it entailed, would also help players to establish new forms of connection with the exhibited artwork and the surrounding architecture. It enabled encounters that were more personal, emotional and sensuous than what they would usually experience during a regular art museum visit.

In the following sections, we first present the two primary findings on the relationship as a resource and the enablement of new connections to the art. We then move on to unfolding in more detail results from the analysis that show how the players' experiences were intensified in four different ways: 1) by creating intimacy, 2) by enabling explorations of movement, rhythm, body and space, 3) by stimulating the imagination, and 4) by enabling play with social boundaries.

The Relationship as a Resource

A key feature of the design was how it connected two people in an intimate way. This enabled players who knew each other well to build on their knowledge, trust and specific relationship dynamics to achieve a meaningful experience in the museum. As P19 puts it, "*If it's with somebody that you know well. It gives a certain framework and certain ways to exchange*". In the trial of 'Never let me go' most of the player duos were closely acquainted with each other. Only one pair met for the first time (P19, P20). As could be expected, the choice of player partner had a big impact on the experience. As P13 describes it, "*I thought about the social boundary between us. Because we haven't known each other that long, I felt a little bit polite. It was like I don't want to ask too much. I don't want to push you too much. So, if we had been doing it a longer time, or maybe if I came with somebody that I had known for ten years, I think I would have pushed it more actually. So, I felt that I became very aware of where you were*". The temporarily heightened awareness of the relationship also led to new learnings. As P15 says, "*I learned something from my avatar. It was a way of getting to know another person's actions and intentions*".

The more intimate the connections between the two players were, the more possibilities for exploration it provided. P5 explains, "*It's about knowing the other person so that you can almost anticipate what they would feel and how they would react to you. You could see the smile coming, like the turning and smiling at you because of the playfulness*". This had a clear effect on how the players were able to engage with the artwork and the surrounding architecture (more on this in the next section). However, even though an already established close relationship was a great recourse in order to make the museum experience meaningful, several players suggested that playing 'Never let me go' could be an interesting way of getting to know someone new. P19 who played with a person she didn't know from before, confirms this in a way by saying: "*I think it's even good in our culture to start to try to emphasize that people can communicate differently. But we didn't do it so much in the first round. We did it the second time. But we also don't know each other so well. Now we know each other better*".

Enabling New Forms of Connection with the Art

One of the most promising results from the trial of 'Never let me go' was that participants were experiencing new forms of connection with the art. As P9 says in the interview, "*It felt* *stimulating. A way of asking new questions. It helps you to use the beginner's mind. To look with fresh eyes on things and step out from your regular thought-inertia*". This "beginner's mind" was a result of players paying extra attention to different qualities of their experience. As P18 puts it, "*I was more aware of emotions, because I was prompted to be thinking about things I normally don't think about*". Being guided to look or to sense certain things helped to intensify or bring forth different details or aspects of the art experience. As P19 explains, "*If I'm sensing the colour purple and if someone is showing me yellow, then that is intensifying the colour yellow for me*". As a result, a shift seems to have happened where the role of the observer turned into something else, something more open. P4 describes it in this way: "*I think it was a chance to connect with the art and not just be an observer, but to be part of the paintings but also the whole room. It helped me enjoy it and understand it more. And think about it more. It wasn't just my eyes watching. It was my whole mind observing*". Part of what helped this shift take place seems to be the sudden change in perspective enabled by receiving a prompt at just the right moment. P13 explains, "*If you just started looking at something and you're experiencing it and then you get an instruction that exact moment. It's extremely interesting, because it changes your perspective. And then it's like you're levelling up your experience. That outside input allows you to go places that maybe you couldn't have gone or wouldn't have gone on your own*". This openness to the art and the experiencing of it could of course be achieved by the participants on their own, although playing 'Never let me go' made it easier. P13 again puts it this way: "*The instructions enabled me to connect with the art in a way that sometimes can require a bit of an effort or you have to get into a specific mindset to really enjoy it, or to really consider what it's about*".

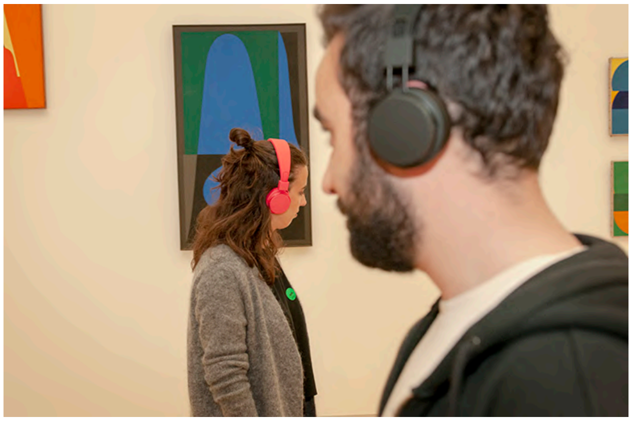


Figure 3. The Controller looking at the Avatar looking at art.

However, the forms of experiences described so far required that the players were able to establish a certain level of initial emotional connection or interest in the artwork which they were engaging with. If that wasn't the case, the participants would instead use the opportunity to play and have fun with it. P12 describes it this way: "*When the art became let's say very modern to a point where I could not connect with it anymore, the playfulness became a defence mechanism. I don't understand this so I will make fun with it. Because if I can't really connect with it, or interact with it on an emotional level, then I can at least make a fun experience out of it*". This shows that using 'Never let me go' enabled a wide range of affective modes in which to experience the art, allowing the users to explore different intensities and ways of being. What here follows is an analysis of exactly how the players' experiences were intensified.

Intensification Through Intimacy

During the trial the participants experienced feelings of intimacy and empathy which intensified their affective encounters with the art and each other. What here follows are descriptions of these experiences in relation to different aspects of the design.

Playing with agency and control

The set up with two roles, the Avatar and the Controller, playfully provided a specific form of power relationship between the players. As the Avatar, players would voluntarily relinquish parts of their agency, knowing that they could retrieve it when they wanted to. Controllers, on the other hand, would accept the challenge of being the one in control of the situation. Both letting go of control and receiving an increasing amount of it led to certain feelings of tension as well as enjoyment. There was a strong element of trust and care being established between the players in order for these dynamics to be played out. As P8 describes it, "*It feels like you want to take care of the other person, when you are the controller. Make it good for them. Or tease them or something. But still you have the responsibility*". And P18 says, "*I just went along with everything. But I also trust her and knew the circumstances, so I had no problems with doing that*". Putting themselves into the hands of someone else, someone they trusted, strengthened the feeling of intimacy between the two players and intensified their experience.

Putting oneself into someone else's shoes

As Controllers, players were expected to engage with the Avatars and be part of shaping their experience. This led to them having intimate, intense and emotional engagements with the Avatars as well. Many of the participants described the Controller experience as being so focused on the Avatar that they would feel what they thought the Avatar was feeling. "*It is an interesting and engaging experience to be the controller. It forces you to put your attention on the other person and try to be doing an empathy exercise. Putting yourself in the shoes of the other*", as P9 puts it. And P6 explains it this way: "*Thinking back, it's a little fuzzy when I was a Controller and when I was the Avatar. Throughout it was empathy when she was the avatar, because I was anticipating her feelings. So, that's why I keep jumping in and saying things like this was intense although she was actually the Avatar. There's no difference in my mind*".

Making it personal

The possibility to share very personal moments was another aspect of the design that enhanced the feeling of intimacy.

These moments were in most cases triggered by the questions which the Controllers were sending (or asking) their Avatars, often in relation to an artwork they were engaging with. This led to very personal reinterpretations of the artwork. From the point of view of the Avatar P4 gives this example, "*It was intense. Very interesting. One time there was a painting of a woman, a naked woman. And she was longing or a bit lonely, standing. I could see myself in that painting. It was just like my mind flew to many situations and it was very emotional*". Depending again on the level of intimacy already established in relationship between the two players, going into this private sphere of emotions felt more or less appropriate. As P8 points out, "*Some of the questions were too intimate. I felt that those questions were leading more toward deeper feelings and memories. Like when you ask them in that way, in an art setting. I don't know. It felt weird*".

The use of voice

The presence of an external voice is a significant part of 'Never let me go'. The decision to use a pre-recorded voice, instead of letting players use their own, was taken in order to limit the scope of the communication – to set a clear tone and a frame for the whole experience. However, players never found it strange to use this voice and it easily became part of their communication. The voice in itself and the fact that players were in the situation of active listening, helped to create intimacy. As P20 points out, "*It was more intimate in a way, because headsets create a bubble and a voice in a headset is quite intimate for me. And it wasn't my partners voice, but it was like something that she was saying to me*". The voice also helped players to relax and receive the prompts they were given. As P10 puts it, "*With the voice vocalising the prompts in a very soothing way and so on. It felt very much as in a guided meditation in which, at least to me, it didn't feel invasive*". And P4 even says, "*It's like it was taking us on a journey only with the voice*".

Intensification through Explorations of Movement, Rhythm, Body and Space

'Never let me go' fostered new ways for the players to move in the art museum in terms of rhythm, expression and as a means of communication. This intensified their awareness of their bodies and the space around them, leading to new forms of experiences both in relation to the art, the architecture and to each other.

Moving together

Having the invisible bond that the mobile technology provided, the players of 'Never let me go' more or less always moved in relation to each other. Most often the two players would walk around in the museum together at a close distance. One would be leading and the other following. This sometimes led into a form of a dance around the artworks. P19 describes it this way: "*There was this moment when I think I was the Controller and we were looking at these three sculptures, and I was moving down, and I said, 'Follow me', or 'Look closer' maybe. And then I started to move around, and she also moved around and then it was like a shared experience. I mean that was an interesting moment we communicated with the body*". And as P6 puts it, "*It felt like a choreography, because we were all in sync*".

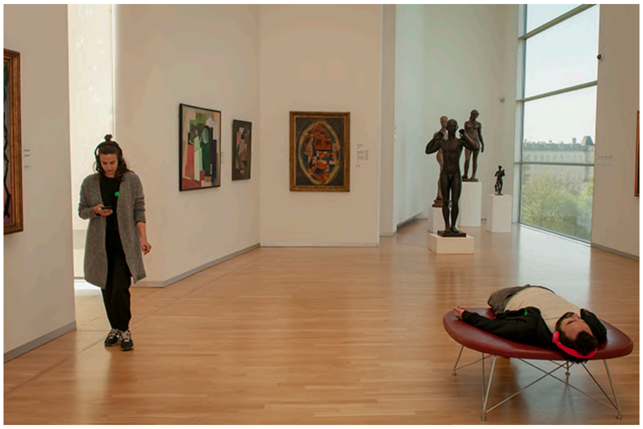


Figure 4. Avatar lying down while the Controller is standing by.

Speeding up and slowing down

The players would experiment with using different rhythms than they would normally use inside a museum. As P15 explains, "*Going very fast I enjoyed, because you don't usually move fast without having anywhere to go in this kind of place. I realized that I have never been moving fast just to move fast*". Sometimes this led to very intense situations which involved a lot of trust. P12 gives this example: "*When I was told to close my eyes and then walk faster. That was a moment were I just thought I'm going to smash into a painting now*".

Player would also use 'Never let me go' to slow down and become more present. As P2 says, "*I think that some of these tasks were about to stay in the moment. Like a meditative state in a way. So, it helps you to reflect: Where are you now? What is happening at the moment?*". P18 expresses appreciation of being able to create these moments as a Controller by saying, "*I wanted to do that with the 'Close your eyes', 'Breathe deeply', 'Imagine that everything is connected'. That's cool, that you can make us create this situation of calming down, rooting the person, and then opening the eyes again and then continue. It was nice to be able to do that*".

Using the body

Using their bodies in an attempt to copy artworks or to sense them in new ways became both an amusing and an interesting way for the players to explore the exhibitions together. As P15 explains, "*I normally don't interpret anything with my body. That's a very good alternative for me, who doesn't like speaking. I could do that more. I enjoyed copying the bubbly sculpture, trying to become like it. That was a nice moment. It was an interesting form for the body to copy*". For P9 it became a way to explore his sense of perception. As he says, "*I think the prompt was something like 'Become a part of this'. And that was a good cue to use my body weirdly in that non-anthropomorphic, static universe that was in the room. It felt somewhat enjoyable on the side of exploring perception through physicality. Which is something that is not often done consciously*".

Sensing the space

The mindset that the players adopted as they were using 'Never let me go' helped them to become more aware of their surroundings. They experienced space somehow differently which opened up for the possibility to explore not just the artwork but the whole architecture. As P3 explains, "*I felt like it was much quieter, and we had more space. Even when there were people around*". The freedom to move differently was part of what made this possible. P15 puts it this way: "*I analysed the room and what was in the roof. It's like you become more relaxed in your neck. Looking more freely*". This led to some intense and rewarding experiences. P19 gives this example: "*I remember when the architecture opens up with the glass wall and you asked me to look. That was a nice moment. I was more like… [looking down]. I have a tendency to be like that. I mean really into things. And then you asked me to look up. That was nice to be guided and be like just aah!*".

Intensification through Stimulating the Imagination

Part of the ludic approach to the design of 'Never let me go' was the goal to stimulate players imagination in different ways. During the trial, however, players also repurposed the content towards novel intense and playful experiences.

Creating a sense of urgency

Under the category 'Imagine that', Controllers would find a number of options with a rather uncanny feeling to them. These were used by the players to achieve a feeling of eeriness or a sense of urgency. As P3 describes it, "*She made it very dramatic and very apocalyptic in a way. She kept telling me it's all going to fall apart. And 'Imagine that these are your last memories'. She did this a couple of times and it gave me a very eerie emotion especially in connection to the music*". For P11 this turned out to be the missing piece for her to have a deeper emotional experience with a specific painting. She explains, "*I think there was one point where he said to me 'Imagine that everything is falling apart'. And we were looking at a painting of D-Day. And I was like yes everything is falling apart and will fall apart right here. And that helped me to get a little bit more into the picture… Or get sort of the feeling out of that painting. I remember specifically there was this one guy in the corner of the picture. That was very close to me. He had his arms full of holes. And that made me really, really, really sad*".

The potential in becoming

The ambiguous category of 'Becomings' was a bit challenging for the players in the situations where they didn't quite know how to interpret it. As P6 explains, "*So, become tense. Okay, I'm tense now. But it doesn't necessarily become visible and it's a bit of a fabricated feeling in a way. Because if for instance say that there's this intense picture and you're looking at it and get 'What does this remind you of?', then the tenseness becomes organic and you feel it*". On the other hand, these prompts would also give players a direct opportunity to explore small shifts in awareness or body posture and to play with their senses in this way. P13 gives this example: "*When I got 'Become tall' I felt it inside. I was looking at something up there and I was imagining that I was on the same eye level as it. I was thinking like that I was up there*". For P14 it became an intense experience just to stand on her toes, very discreetly, in the presence of others. She describes it this way: "*I think at some point she told me something like to become light. And that was a bit challenging. I mean I didn't feel totally comfortable as doing it at home. At the same time, I felt like doing it. And it was like yeah, there are people here, but it's not a bad thing. So, I just did it*".

Objects looking back

One of the prompts was specifically designed to challenge the relationship between the observer and the observed through letting players imagine that objects or artworks were returning their gaze. Players reported that, during the trial, this was one of the prompts that affected them most profoundly. P13 gives this example: "*It was like the place came alive a bit more to me. I especially remember one of the first things you asked was, or you said: 'Imagine if this is looking back at you'. I felt like all the pictures were staring at me. And there were some bizarre creatures in there*". Not only did it give them an uncanny feeling of artworks coming alive, it also led to moments of deeper connection with the art. P14 here describes an intense encounter with a small sculpture: "*That was super strong, 'Imagine that something is staring back at you'. So, I was in front of this little octopus' sculpture or something. I was quite looking at it. I really like sculptures and I always look at their expression. And when I heard that, it was so real and so connected, because yes, it was looking back at me*".

Intensification through Playing with Social Boundaries

Using something as playful as 'Never let me go' inside an art museum, inevitably led to players pushing against the existing social norms of how to behave during a visit. Because the system provided clear rules and roles (although there was quite a large amount of wiggle-room) it helped them to feel confident enough to explore, or at least touch upon, social boundaries, between each other as well as in relation to other visitors or guards present in the exhibition space. This gave the play an extra level of intensity and challenge. As P10 explains, "*Because at times of course getting instruction gives you an alibi. But especially with the physical prompts I was limiting myself to what I feel is acceptable behaviour. Without any onlookers I might have done stuff bigger*".

Controllers would also consciously play with the social boundaries in order to tease their Avatar or create funny situations. Thinking back P2 says to her Controller, "*I noticed that you said 'Shake' when the security guy passed*". This led to a few occasions of resistance when the Avatar needed to decrease the level of intensity. As P3 explains, "*It was mostly because it was awkward for me. For example, she would tell me to stretch or mimic. And I did it a few times but then I was feeling very awkward. So, I didn't*". However, the Controllers didn't just push the Avatars to explore their boundaries for the sake of their amusement, they also saw it as an opportunity for them to explore new ways of being. P4 puts it this way: "*I gave her some commands of becoming this or becoming that and* *stuff with her body, because I wanted her to overcome her boundaries and maybe to let go and try to do something that she feels is awkward*".

In the following section we discuss these results and the potential and concerns arising from working with relational strategies when designing interactive systems.

DISCUSSION

If we look more closely into what relations are actually activated in 'Never let me go', the list can get very long; we have relations between people (players and other visitors at the museum), between players and the artworks, between players and the physical space/architecture, between players and the museum as a cultural institution – and then we have more emergent/subtle relations; between the personal/private and the public/institutional (e.g. in terms of discourses and narratives), between inner states and outer world, between fact and fiction and so on. However, even though we find it enriching and potentially valuable for designers to consider all these relational aspects (and more), we believe it is important to unfold in more detail the primary relational activation which backgrounded everything else; the one between the two players; the Avatar and the Controller. Rather than aiming at intensifying all relations, 'Never let me go' starts from a basic intensification and rearrangement of a very basic yet rich set of relations; the relationship between two people. Of course, a relationship is in itself an assemblage, connecting bodies, lived stories and other attachments – and all of this comes into play and colours the experience initiated through the course of interaction, entering into resonance with the more-than human surroundings.

Emergence

In the beginning it was stated that 'Never let me go' was conceived as a generic system that could be deployed in any large to mid-size art museum, gallery or sculpture park. Potentially its use could be even broader. However, we do believe that art museums provide particularly rich semiotic, affective and liminal environments well suited for this type of design. We can clearly see from the empirical evaluation that even though the infrastructure might be conceived as generic, it has clearly resulted in strongly situated affective encounters in this particular museum between these particular people. This is an important takeaway; designing for relations does not necessarily mean designing for specified relations that are already known in advance. Here, we will argue that designing for *emergence* is a key concern.

Emergence is integrally related to creativity, something which has been previously explored in HCI [65]. In many ways this approach could be said to go counter to traditional strategies for dissemination and communication in the museum world, where the primary aim is often to curate and 'control' the experience from a predetermined set of already given constraints. It might be argued that the worlding ensuing from the primary relational activation will always be emergent and situated. However, through play this process becomes more open to the unexpected and to affective and creative qualities of experience. Relations are put into motion; new potentials are actualised. Even though the focus on the relationship would sometimes distract players from the exhibitions, it was compensated by the level of affective engagement it provided in relation to specific artworks. By changing the constraints from curation to emergence, what we see is an actual intensification of the experience of, and connection to, the artworks and the museum as an institutional and architectural space. In addition, we also see something else – namely that the couples engaged in the experience encounter each other anew. Not only is the museum experience intensified, so too is the relationship.

Intimacy and ambiguity

Based on the above, we do believe it makes sense to talk about play design as a relational strategy for catalysing affective encounters on a number of levels. If we then want to move deeper into the actual intensification that took place during the trial of 'Never let me go', we believe two key concepts for understanding the nature of this are *intimacy* and *ambiguity*. That intimacy is a relational quality that leads to an intensification of affect is perhaps not surprising as affect and intimacy are closely interconnected. As Sadowski points out in her work on digital intimacies,

> Coming back to the question of intimacy, it is becoming clear that intimacy is always affective. A collision of bodies (which might also be bodies of thought, technological objects, or collectivities, as Deleuze explained), is an intimate encounter in which bodies are modified through their encounter with the other. [63:51]

From this perspective intimacy constitutes complex relations that goes beyond the private sphere. It signifies a significant degree of exposure to another living or non-living body. As Sadowski puts it, "*Getting intimate with someone or something means crossing a boundary and connecting with the other, and being at risk of losing oneself to some degree.*" [63:45]. Experiences of intimacy can be felt as varying degrees of sensitivity, vulnerability and responsiveness. By putting 'being' into play it can also lead to experiences of enchantment [52]. Moreover, it is often ambiguities of intimacy that people find particularly interesting and exciting to engage with (just think of flirting and you get the idea).

When intimacy is coupled with ambiguity in the design of systems for communication, it will often lead to users engaging in active reinterpretations based on the relational activation. This was shown in a HCI study in which the intimacy between the interlocutors led to "surprising richness" of communicative experiences using very simple and ambiguous interfaces [49]. This can be further related to the findings in a recent HCI study where interpersonal gifting was used in order to emphasis personal and social aspects of a museum visit. As a result of this relational activation, users reported "*new ways of looking at or thinking about museum objects*" [69:7].

When it comes to play design, elements of ambiguity are important to spark the playful mindset and to encourage curiosity and exploration [29,30,31,32]. No emergence can occur (in relation, interpretation or behaviour) without some form of ambiguity or openness being present. In 'Never let me go', intimacy and ambiguity were integrated into both the system architecture as well as the content. The takeaway here is that the combination of these two qualities empowered users to engage in the playful behaviour leading to personal meaning-making and affective encounters with the artwork and architecture, which were part of the overall intensification of their museum visit. However, it is important to underline here that the design gave them the alibi both to immerse themselves in the experience and find ways to withdraw.

Trust

We see from the overall design process and ensuing evaluation that it is absolutely essential to establish *trust* on a number of levels: trust in the situation, in the system, and between participants. The tolerance of intimacy and ambiguity is highly individual, situational and culturally specific, and therefore issues around mutuality and consent have to be worked out in a satisfactory way. As with all play, there needs to be possibilities for deep engagement as well as to change state or discontinue. However, when the system is designed in an open and emergent manner which lets the participants negotiate the level of intimacy between themselves, as well as their depth of engagement, it becomes less of a problem. Players establish a social contract between each other as they enter into play [71] which can be renegotiated at any time. Previous HCI research confirms this by showing that social games can be an effective strategy at fostering interpersonal trust [18]. In 'Never let me go', in the recording which is played for the Avatar when the Controller uses the BEGIN-button, the voice says:

> Welcome to this avatar experience. You will soon hear instructions chosen by your partner. Follow these instructions to your own ability and desire. Make it as dramatic or as subtle as you wish. Remember to stay safe and stop whenever you want. When in doubt of what to do, relax and enjoy the art. Now start by doing just that. Enjoy!

This statement set the frame for what was expected from the players taking the Avatar role, giving them the space to freely decide on how to play. We find creating the right balance between trust, intimacy, ambiguity and emergence to be absolutely key for developing successful play design strategies that enable people to have intense affective experiences, but also allow them to always opt out. When working with powerful materials such as relationships, intimacy and ambiguity, ethical considerations are important. As such, it should never only be a question of intensification, but of developing appropriate frames and constraints.

CONCLUSION

In this paper, we have explored how play design can be used as a relational design strategy to intensify affective encounters in the art museum through the use of digital technologies. Based on the presented results from the evaluation of the 'Never let me go' web application, we have shown the complexity of how this relational activation and intensification plays out in situated encounters between people, art and places. In the design of the app, performative artistic strategies, such as the use of voice, defamiliarization, and altered forms of agency, were put into a playful context. From the analysis we see how a range of affective experiences were intensified 1) by creating intimacy, 2) by enabling explorations of movement, rhythm, body and space, 3) by stimulating the imagination, and 4) and by enabling play with social boundaries. Finally, we have stressed that emergence, intimacy, ambiguity and trust are key elements in creating affectively engaging museum experiences, and that the inter-activation of people's existing relationships through the course of interaction has proven to be a powerful starting point. So far, this has only been tested in the context of an art museum, but we see potential for future work to explore these ideas in other settings as well.

ACKNOWLEDGMENTS

The authors thank the National Gallery of Denmark, the anonymous participants, as well as, colleagues, friends, and reviewers for their helpful comments. A special thanks to Halfdan Hauch Jensen at the ITU Affective Interactions & Relations (AIR) Lab for all the help. The work was supported by the European Union's Horizon 2020 research and innovation programme under Grant No.: 727040. Photos by Johan Peter Jønsson.

REFERENCES

[1] Annette Aboulafia and Liam J. Bannon. 2005. Understanding Affect in Design: an Outline Conceptual Framework. *Theoretical Issues in Ergonomics Science* 5, 2: 4–15.

[2] Aubrey Anable. 2018. *Playing with Feelings: Video Games and Affect*. Univ Of Minnesota Press.

[3] Ben Anderson. 2016. *Encountering Affect: Capacities, Apparatuses, Conditions*. Routledge, London & New York.

[4] Nikolaos Avouris and Nikoleta Yiannoutsou. 2012. A review of mobile location-based games for learning across physical and virtual spaces. *Journal of Universal Computer Science* 18.

[5] Tony Bennett. 1995. *The Birth of the Museum: History, Theory, Politics*. Routledge.

[6] Ferran Altarriba Bertran, Elena Márquez Segura, and Katherine Isbister. 2020. Technology for Situated and Emergent Play: A Bridging Concept and Design Agenda. *ACM CHI Conference on Human Factors in Computing Systems (CHI 2020)*, ACM.

[7] Lisa Blackman. 2012. *Immaterial Bodies: Affect, Embodiment, Mediation*. SAGE Publications.

[8] Blast Theory. 2001. *Can You See Me Now?*

[9] Kirsten Boehner, Rogério DePaula, Paul Dourish, and Phoebe Sengers. 2005. Affect: From Information to Interaction. *Between sense and sensibility*, ACM.

[10] Kirsten Boehner, Phoebe Sengers, and Geri Gay. 2006. Affective presence in museums: Ambient systems for creative expression. *Digital Creativity* 16, 2: 79–89.

[11] Roger Caillois. 2001. *Man, Play and Games*. University of Illinois Press.

[12] Janet Cardiff. 2005. *Words Drawn in Water*.

[13] Luigina Ciolfi, Liam J. Bannon, and Mikael Fernström. 2008. Including Visitor Contributions in Cultural Heritage Installations: Designing for Participation. *Museum Management and Curatorship* 23, 4: 353–365.

[14] Patricia Ticineto Clough, ed. 2007. *The Affective Turn: Theorizing the Social*. Duke University Press.

[15] Dan Cosley, Jonathan Baxter, Soyoung Lee, et al. 2009. A Tag in the Hand: Supporting Semantic, Social, and Spatial Navigation in Museums. *SIGCHI Conference on Human Factors in Computing Systems*, ACM, 1953–1962.

[16] Dan Cosley, Joel Lewenstein, Andrew Herman, et al. 2008. ArtLinks: Fostering Social Awareness and Reflection in Museums. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 403–412.

[17] Arthur C. Danto. 1981. *The Transfiguration of the Commonplace: A Philosophy of Art*. Harvard University Press, Cambridge, MA.

[18] Ansgar E. Depping, Regan L. Mandryk, Colby Johanson, Jason T. Bowey, and Shelby C. Thomson. 2016. Trust Me: Social Games are Better than Social Icebreakers at Building Trust. *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*, 116–129.

[19] Haraway Donna J. 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press Books.

[20] Sandra Dudley. 2009. *Museum Materialities*. Routledge.

[21] Scott Eberle. 2014. The Elements of Play: Toward a Philosophy and a Definition of Play. *American Journal of Play* 6: 214–233.

[22] Satu Elo and Helvi Kyngäs. 2008. The qualitative content analysis process. *J Adv Nurs* 62, 1: 107–115.

[23] Erika Fischer-Lichte. 2008. *The Transformative Power of Performance*. Taylor And Francis.

[24] Martin Forsberg and Jenny Nordberg. *Doppelgänger*.

[25] Lesley Fosh, Steve Benford, Stuart Reeves, and Boriana Koleva. 2014. Gifting Personal Interpretations in Galleries. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, ACM, 625–634.

[26] Lesley Fosh, Steve Benford, Stuart Reeves, Boriana Koleva, and Patrick Brundell. 2013. 'See Me, Feel Me, Touch Me, Hear Me': Trajectories and Interpretation in a Sculpture Garden. *CHI 2013: Changing Perspectives*, ACM, 149–158.

[27] Jonas Fritsch. 2009. Understanding Affective Engagement as a Resource in Interaction Design. *Engaging Artefacts*, 1–9.

[28] Jonas Fritsch. 2018. Affective Interaction Design at the End of the World. *DRS 2018: Catalyst*, 896–908.

[29] William W Gaver. 2009. Designing for Homo Ludens, Still. In T. Binder, J. Löwgren, L. Malmborg, J. Löwgren, and L. Malmborg, eds., *(Re)Searching The Digital Bauhaus*. Springer London, London, 163–178.

[30] William W Gaver. 2002. Designing for homo ludens. 2–5.

[31] William W Gaver, Jacob Beaver, and Steve Benford. 2003. Ambiguity as a Resource for Design. ACM, 233–240.

[32] William W. Gaver, John Bowers, Andrew Boucher, et al. 2004. The Drift Table: Designing for Ludic Engagement. *CHI '04 Extended Abstracts on Human Factors in Computing Systems*, ACM, 885–900.

[33] Gwen Gordon. 2008. What is play? In search of a definition. In D. Kuschner, ed., *From children to Red Hatters: Diverse images and issues of play*. University Press of America, 1–13.

[34] Melissa Gregg and Gregory J. Seigworth, eds. 2010. *The Affect Theory Reader*. Duke University Press.

[35] Karin Hammarberg, Maggie Kirkman, and Sheryl de Lacey. 2016. Qualitative research methods: when to use them and how to judge them. *Human Reproduction* 31, 498–501.

[36] Marek Hatala and Ron Wakkary. 2005. Ontology-based user modeling in an augmented audio reality system for museums. *UMUAI* 15, 3–4: 339–380.

[37] Adrian Hazzard, Steve Benford, and Gary Burnett. 2015. Sculpting a mobile music soundtrack. *SIGCHI Conference on Human Factors in Computing Systems*, 387–396.

[38] Thomas S. Henricks. 2012. *Selves, Societies, and Emotions: Understanding the Pathways of Experience*. Routledge.

[39] Thomas S. Henricks. 2015. Play as Experience. *American Journal of Play* 8, 1.

[40] Thomas S. Henricks. 2015. *Play and the Human Condition*. University of Illinois Press.

[41] Janna Holmstedt. 2012. *Limit-cruisers (#1 Sphere)*.

[42] Kristina Höök, Anna Ståhl, Petra Sundström, and Jarmo Laaksolahti. 2008. Interactional empowerment. *ACM*

CHI 2008 Conference on Human Factors in Computing Systems, 647–656.

[43] Johan Huizinga. 1998. *Homo Ludens: a study of the play-element in culture*. Routledge, London.

[44] Katherine Isbister. 2017. *How Games Move Us: Emotion by Design*. MIT Press.

[45] William James. 1912. *Essays in Radical Empiricism*. Cosimo Inc., New York.

[46] Stefan Kaegi and Jörg Karrenbauer. *Remote X*.

[47] Athina Karatzogianni and Adi Kuntsman. 2012. *Digital Cultures and the Politics of Emotion: Feelings, Affect and Technological Change*. Palgrave Macmillan.

[48] Ivan Karp, Corinne A. Kratz, Lynn Szwaja, and Tomas Ybarra-Frausto, eds. 2006. *Museum Frictions: Public Cultures/Global Transformations*. Duke University Press.

[49] Joseph "Jofish" Kaye, Mariah K. Levitt, Jeffrey Nevins, Jessica Golden, and Vanessa Schmidt. 2005. Communicating Intimacy One Bit at a Time. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2005)*, ACM, 1529–1532.

[50] George E. E. Marcus and Michael M. J. Fischer. 1999. *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*. University of Chicago Press.

[51] Brian Massumi. 2002. *Parables for the Virtual: Movement, Affect, Sensation*. Duke University Press.

[52] John McCarthy, Peter Wright, Jayne Wallace, and Andy Dearden. 2006. The experience of enchantment in human–computer interaction. *Pers Ubiquit Comput* 10: 369–378.

[53] Joel McKim. 2009. Of Microperception and Micropolitics: An Interview with Brian Massumi, August 15 2008. *Inflexions: A Journal for Research-Creation* 3.

[54] D. Mulcahy. 2016. "Sticky" learning: Assembling bodies, objects and affects at the museum and beyond. In J. Coffey, S. Budgeon, and H. Cahill, eds., *Learning Bodies: The Body in Youth and Childhood Studies*. Springer, Singapore, 207–222.

[55] Donald A. Norman. 2004. *Emotional Design: Why We Love (Or Hate) Everyday Things*. Basic Books.

[56] Jeni Paay, Jesper Kjeldskov, Anders Christensen, et al. 2008. Location-based storytelling in the urban environment. *OZCHI 2008: Designing for Habitus and Habitat*.

[57] Helen Palmer and Vicky Hunter. 2018. New Materialism. *Worlding*. Retrieved January 30, 2020 from https://newmaterialism.eu/almanac/w/worlding.html.

[58] Sara Perry, Maria Roussou, Maria Economou, Hilary Young, and Laia Pujol. 2017. Moving Beyond the Virtual Museum: Engaging Visitors Emotionally. *23rd International Conference on Virtual Systems & Multimedia (VSMM)*, 1–8.

[59] Daniela Petrelli and Elena Not. 2005. User-centred design of flexible hypermedia for a mobile guide: reflections on the hyperaudio experience. *User Modeling and User-Adapted Interaction* 15, 3–4: 303–338.

[60] Rosalind Picard. 1997. *Affective Computing*. MIT Press, Cambridge.

[61] Lotte de Reus, Jouke Verlinden, and Maaike Roozenburg. 2013. Nonlinear stories told by cups and saucers: Smart Replicas with responsive 3D audio. *Ar[t] Magazine* 3: 34–39.

[62] Karin Ryding. 2020. The Silent Conversation: Designing for Introspection and Social Play in Art Museums. *ACM CHI Conference on Human Factors in Computing Systems (CHI 2020)*, ACM.

[63] Helga Sadowski. 2016. Digital Intimacies: Doing Digital Media Differently. Retrieved January 27, 2020 from https://www.diva-portal.org/smash/get/diva2:1047582/FULLTEXT01.pdf.

[64] Eve Kosofsky Sedgwick. 2003. *Touching Feeling: Affect, Pedagogy, Performativity*. Duke University Press.

[65] Jennifer Seevinck. 2014. Emergence and Artistic Visualization. *Proceedings of the 7th International Symposium on Visual Information Communication and Interaction*, ACM.

[66] Phoebe Sengers, Rainer Liesendahl, Werner Magar, et al. 2002. The Enigmatics of Affect. *DIS2002*, 87–98.

[67] Miguel Sicart. 2014. *Play Matters*. MIT Press.

[68] Laurajane Smith, Margret Wetherell, and Gary Campbell, eds. 2018. *Emotion, Affective Practices, and the Past in the Present*. Routledge.

[69] Jocelyn Spence, Benjamin Bedwell, Michelle Coleman, et al. 2019. Seeing with New Eyes: Designing for In-the-Wild Museum Gifting. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems (CHI 2019)*, ACM.

[70] Baruch Spinoza. 1678. *Ethics*. Citadel Press, New York.

[71] Jakko Stenros. 2012. In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play. *2012 International DiGRA Nordic Conference*, 1–19.

[72] Oliviero Stock, Massimo Zancanaro, Paolo Busetta, et al. 2007. Adaptive, intelligent presentation of information for the museum visitor in PEACH. *User Modeling and User-Adapted Interaction* 17, 3: 257–304.

[73] Brian Sutton-Smith. 1999. Evolving a consilience of play definitions: Playfully. In S. Reifel, ed., *Play Contexts Revisited*. Praeger Publishers Inc, 239–256.

[74] Maria Vayanou, Yannis Ioannidis, George Loumos, and Antonis Kargas. 2019. How to play storytelling games with masterpieces: from art galleries to hybrid board games. *Journal of Computers in Education* 6, 1: 79–116.

[75] Vassilios Vlahakis, Thomas Pliakas, Athanasios M. Demiris, and Nikolaos Ioannidis. 2003. Design and Application of an Augmented Reality System for continuous, context-sensitive guided tours of indoor and outdoor cultural sites and museums. *VAST*, 155–164.

[76] Ron Wakkary and Marek Hatala. 2007. Situated play in a tangible interface and adaptive audio museum guide. *Personal and Ubiquitous Computing* 11, 3: 171–191.

[77] Margret Wetherell. 2015. Trends in the Turn to Affect: A Social Psychological Critique. *Body & Society* 21, 2: 139–166.

[78] Andrea Witcomb. 2014. “Look, Listen and Feel”: The first peoples exhibition at the Bunjilaka Gallery, Melbourne Museum. *Thema La revue des Musées de la civilistion* 1: 49–62.

[79] Andrea Witcomb. 2015. Cultural pedagogies in the museum: walking, listening and feeling. In M. Watkins, G. Noble, and C. Driscoll, eds., *Cultural Pedagogies and Human Conduct*. Routledge, London, Eng., 158–170.

[80] Jetmir Xhembulla, Irene Rubino, Giovanni Malnati, and Claudia Barberis. 2014. Intrigue at the Museum: Facilitating Engagement and Learning through a Location-based Mobile Game. *10th International Conference on Mobile Learning*.

[81] The GIFT Box – Tools and ways of working to help museums make richer digital experiences for their visitors. Retrieved April 16, 2020 from https://gifting.digital/.

Paper 6:

Challenging the Illusion of Stability: Relational and Performative Potentials of Critical Play.

Ryding, K.

Forthcoming:
Under review for publication in Games and Culture published by Sage.

Abstract

Taking Flanagan’s critical play concept as a point of departure, this article extends it by elaborating on the relational and performative qualities and capacities of play. This includes play as reflexive action as well as a method to explore ways of becoming that go beyond language, signification and discourse. To further shed light on this, an empirical study set in an art museum is presented, as it provided the opportunity to study play in a public institution which simultaneously serves to protect and suppress it.

Keywords: critical play, performativity, affect, museums

Challenging the Illusion of Stability: Relational and Performative Potentials of Critical Play

Artist and game scholar Mary Flanagan's concept "critical play" has gained a lot of attention, since her book on the subject was released in 2009. In it she explores a number of historical artistic play practices and games designed for political, aesthetic, and social critique, traversing from 19th Century doll play to modern videogames. With this article, my intention is to extend and, in some ways, clarify Flanagan's concept by tracing different frictions or tensions that exist within it.

The first step is to address such a contradiction, or perhaps rather a tension, within the critical play concept which I believe is important to highlight. The notion that play can be a means to express and explore social and political issues, has proven to be both inspiring and helpful for game designers, activists and artists (myself included). However, to state it briefly, Flanagan refers to critical play, on the one hand, as a way to "manifest critical thinking" (p. 3), and on the other, she associates it with irrational and absurd "'sense-heightening' experience[s]" (p. 175) as the ones orchestrated by the Dadaist, Surrealist and Fluxus artists – all known for their rejection of reason. In order to shed some light on the tensions existing between these two different critical practices – involving reasoning and reflection on the one hand, and performative and affective techniques on the other – I will turn to Clair Bishop (2012) and her work on participatory art. Here she points to the incompatibilities and tensions involved the distinction between social and artistic critique of capitalism, as the former is underpinned by morality and the later by freedom.

My next step is to further explore critical play as a form of artistic critique with the transgressive power to challenge identity, social norms and cultural conventions (Sutton-Smith, 1999). Building on what Flanagan touches upon when she in the end of her books writes that critical play demands a “refocusing on the *relational* and *performative* as opposed to the object” (2009, p. 261), I ask what do relationality and performativity actually entail when it comes to play (and play design) and in which way does it become *critical*?

In order to seek answers to these questions, I turn to feminist thinkers and play theorists, as well as affect theory building on relational ontologies. This means that the relationship between play and the materiality of bodies and their “capacities and potentialities that are irreducible to language, signification, discourse or categories of identity” (Paasonen, 2018, p. 36) plays an important part in my inquiry. In addition, I present an empirical study set in an art museum; here framed as a public institution which simultaneously serves to protect and suppress play. I take this as an opportunity to bring up the *tension between ritual and play* as a basis for artistic critique as well as the type of critical play I am highlighting here.

To conclude, my overall intention with this article is to foreground relational and performative qualities and capacities of play, in order to further shed light on its critical potential. I propose that critical play as form on artistic critique can be regarded as a design space which I tentatively name “affective critical play” in an attempt to distinguish it from Flanagan’s more inclusive critical play concept. I believe there is a lot of interesting further work to be done in this area, both in terms of conceptual unfoldings and design.

Being Critical – How?

In her work, Bishop adopts Boltanski & Chiapello’s (2005) distinction between social and artistic critique of capitalism and applies it to participatory art. Artistic critique comes out of nineteenth-century bohemianism, and it draws from the indignation towards capitalism (or the *bourgeoisie* as the Dadaists would call it) concerned with, on the one hand, disenchantment and inauthenticity, and on the other, oppression (Bishop, 2012, p. 276). Humour, mocking and play are historically well-known ways in which artists have sought to provoke the ruling class to revolt against, for example, oppressive social norms (see Bakhtin, 1984, 2008; Critchley, 2011). The common denominator for avant-garde groups such as the Surrealists, the Situationist and other artists working with play, as a method or as a form of expression, is the strive for a radical freedom to explore alternative ways to be in the world. As André Breton once wrote: “I madly love everything that adventurously breaks the thread of discursive thought and suddenly ignites a flare illuminating a life of relations fecund in another way.” (Brotchie, 1995, p. 10).

By contrast, social critique, related to either Christianity or Marxism, is occupied by issues such as “the ego of private interests, and the growing poverty of the working classes in a society of unprecedented wealth” (Bishop, 2012, p. 276). The fight against social injustice is here the highest priority, and any moral neutrality, individualism – even unworldliness or withdrawal from reason – are therefore by necessity rejected. In Flanagan’s work, social critique is represented by games that directly address social issues through their narratives and/or their mechanics. However important and valuable these games are, they tend to make use of an instrumental (or submissive) form of play in order to communicate their intended critique (Sicart, 2011) – something which is notably far from the unruly behaviour and absurdities encouraged by the avant-garde art movements to which Flanagan also refer.

Now, in order to form my own understanding of critical play – one that puts emphasis on *artistic* rather than social critique – I feel the need to revisit, not just the notion of performative games, but play itself as a critical practice.

The Paradox of Play

Play is a fundamental part of human existence. This is something most of us instinctively know, yet within academia scholars struggle to fully understand and define what play is. Play is ambiguous and unruly. This can both be said about its nature and about play as a concept, which seems to shift with every new perspective used to frame it (Sutton-Smith, 2001). According to anthropologists Victor Turner, play is betwixt-and-between all standard taxonomic nodes, and essentially elusive: "As such play cannot be pinned down by formulations of left-hemisphere thinking – such as we all must use in keeping with the rhetorical conventions of academic discourse" (1986, 31-32). Yet scholars have tried their best to pin it down. Caillois, in his influential 1961 book *Man, play and games,* defines play as free or voluntary, separate from the routine of life, uncertain, unproductive, governed by rules that suspend ordinary laws and behaviours, and it involves imagined realities that may be set against 'real life' (2001).

Now, there is an interesting paradox to play that I believe is important to highlight in this context: Play is simultaneously *orderly* and *disorderly* (Henricks, 2009). It often relies on shared agreements about rules, goals, environmental boundaries and so on – something which particularly applies when we talk about games. In this capacity, it can bring order to the confusions and complexities of life, as Huizinga has it (1998 [1938], p. 10). At the same time, play invites spontaneity and creativity and gives opportunities to temporarily suspend social and cultural rules and boundaries. One way to understand these two opposite tendencies in play, is through Caillois' (2001) distinction between rule-bound competitive play (ludus), and unstructured and spontaneous play (paidea). As Caillois notes, in human affairs there is a tendency to always organise play into rule-bound games (turning paidia into ludus), on the other hand, as soon as rules are established, they become subject to the pressures of the transgressive power of paidia. Even if it is the spontaneous and creative side to play that first comes to mind when considering it as a form of critique that works against disenchantment, inauthenticity as well as destructive norms and conventions, it is important to take into account that most play exist in a tension between orderly and disorderly tendencies. We chose to follow certain rules in order to give ourselves room to contest others (Henricks, 2009).

Performativity and Play

Building on Foucault, feminist philosopher and gender theorist Judith Butler (1990, 1993, 1999) has been hugely influential in her work on how gender identity is constructed as part of our everyday lives. To articulate this process, Butler brings the concept of *performativity* to the body (Loxley, 2007). Performativity here signifies a process of "stylized repetition of acts" (Butler, 1999, p. 179) that slowly forges us as gendered subjects. From this point of view, our activities and practices are not an expression of some prior identity, but the very means by which we come to be. According to Butler, "the body is not merely matter but a continual and incessant *materializing* of possibilities" (1990, p. 272). Here she builds on Merleau-Ponty and his notion that that the body is a repertoire of infinite possibilities. Culture and history are embodied through an active process, which in its turn generates the identity of the culturally and historically marked body. This takes place "under and through constraint, under and through the force of prohibition and taboo" (Butler, 1993, p. 60). However, according to Butler, to perform one's gender should not be understood only as a means to submit oneself to cultural and social norms and expectations, rather it is through this process that we make ourselves intelligible to others. To act according to norm is to be understood, accepted and to be deemed unproblematic.[1]

Nevertheless, there are ways in which we may unbind ourselves from the performative norm. Even though the mundane performances we go through in our everyday lives may be compulsory, they are not fully determined (Butler, 1993, p. 176). Butler points out the potential of *enacted critique*. Here she gives the performance of drag as an example, as it "imitates the imitative structure of gender", and by so doing, it is "revealing gender itself to be an imitation" (1997b, p. 145). Acts repeat, but they can repeat differently. Even though practices of enacted critique may not let us throw off our gender identity as easy as we change our clothes (as things are more complicated than that), they can be the entry to important revelations. As in the case with the drag artist, who fluently passes between different gender roles (ideally), so too can we learn to experience (or at least get a sense of) the plasticity of human identity. In this sense, these practices serve the purpose of *exposing the illusion of stability and inevitability* – of gender, but also of other social and cultural conventions, norms and regulations.[2]

---

[1] This is closely related to sociologist Erving Goffman's ideas on everyday performances (Goffman, 1959).

Play as Performance

Everyday performative repetitions can be disrupted as we play, and in this sense, play works in the opposite way to Butler's notion of performativity. This does not mean that play is not repetitive at times, yet it is equally open to variation, improvisation and change (Paasonen, 2018). What types of performance do we then find in play which may *serve a critical function*?

Firstly, performance in play can be a form of *reflexive action*, which means being acutely aware of one's actions as they are in progress (Kozel, 2008, pp. 68–69). This can happen spontaneously as we notice that we are being watched (especially if there is an observer who is not part of the play). Moreover, being attentive of one's own and other players' actions can be part of the dynamics of a certain type of play – induced by the rules or the social contract between the players. Think for example of a game of poker where the players are intensely watching each other's every subtle move, down to the twinkle of an eye. This heighten awareness of actions and expressions, intensions and agency provide the opportunity for players to *knowingly* explore personal, social, cultural, legal and material boundaries (Nippert-Eng, 2005; Poremba, 2007). I believe that in this capacity play can function as a form of enacted critique similar to which Butler refer.

---

[2] Butler gives the example of Rosa Parks, the American civil rights activist who in 1955 remained seated on the bus when white passengers were standing, although this was against the regulations in Montgomery, Alabama, at the time (1997a, p. 147).

Secondly, performance in play can be related to the type of performance that philosopher and dancer Susan Kozel describes as *emergence* – that which “occurs out of the fissures in habit and codified behavior” (Kozel, 2012, p. 75). According to Kozel, this is close to the “shimmer” that Barthes talks about when he describes “the shimmering field of the body insofar as it changes, goes through changes” (Barthes, 2005, p. 73). This points to an elusive but significant dimension of experience which Susanna Paasonen refers to when she states that all kinds of play “entail an *openness of becoming*” (2018, p. 133).

Play as a Relational Strategy to Intensify Life

Within cultural studies and social science there has been an upsurge of interest in recent years in how politics, social norms and events have an effect on our emotions, our bodies and our ability to act in the world. In short there has been a “turn to affect” (Wetherell, 2015). The understanding of affect (although sometimes contested) which I focus on here, stems from the philosophy of Baruch Spinoza and his critique of the Cartesian mind-body dualism that has haunted Western philosophy and science for so long. In this sense, the new (or rather renewed) interest in affect is fuelled by the need to go beyond disembodied reason and rationality.

In many ways this new turn in academia and in political activism, come of a reaction against what can be seen as a failure of critical research and critical practices to take into account the dynamics of the body, the emotional layers of experience as well as more-than-human perspectives (Wetherell, 2013). As philosopher and affect theorist Brian Massumi states:

> ‘Critical’ practices aimed at increasing potentials for freedom and for movement are inadequate, because in order to critique something in any kind of definitive way you have to pin it down. (…) [I]t loses contact with other more moving dimensions of experience. (2015, p. 15)

Building on Spinoza’s notion of affect as the capacity *to affect and to be affected,* Massumi talks about our “margin of manoeuvrability” (p. 3). Affect is the movements of the body seen from the perspective of its potential in the ongoing dance of life. Changes in relations are felt as changes in affective intensity (c.f. Anderson, 2016). There are constraints to what we can do in every situation – in terms of biology and physics, as well as, social and cultural expectations – but, as Massumi underlines, we move forward by playing with the constraints, not by avoiding them. In this way, we can make room for change and intensify our lives (2015, p. 6).

This idea of deliberately playing with everyday constraints doesn’t seem far from Butler’s ideas on enacted critique as discussed in relation to play as reflexive action*;* however, affect theorists put a particular emphasis on the pre/non-conscious dimensions of experience and “those intensities that pass body to body (human, nonhuman, part-body and otherwise” (Gregg & Seigworth, 2010, p. 1). In this sense, it shifts the perspective from being human-centred towards being *relation-centred*.

Now, to understand how practices that emphasise emergence and the fluctuation of intensities can become critical, the key is to return to the significance of exposing or challenging the illusion of stability; of identity, of culture and of social practices – even in matter itself (c.f. Barad, 2007). I propose that this process can take place both on a conscious level (as in reflexive action) and on a pre/non-conscious level (as in emergence), resulting in the expansion of one’s capacity to affect and be affected – one’s ability to resist as well as to act differently.

Play is a very specific way to relate to the world. Henrick describes it as a process of recognizing and responding to different "fields of relationships": the physical environment, the body, the mind or psyche, the social or society, as well as culture (2015, pp. 71–73). Different inner states are activated and experienced as we play (Eberle, 2014). At the same time, it gives us opportunities to explore the cultural and social regimes in which we live (Sutton-Smith, 1999). In this manner, *play works both outwards and inwards to put relations into motion*. This of course only happens for limited periods of time, but what matters is that interactions can take place between "situational" versions of ourselves (even ways of being we have no words for) and more general understandings of who we are based on our identity (Henricks, 2015, p. 83). During play there exists periods of time, however brief, when the past is ignored or suspended, and the future has not yet begun. According to Turner, only in these *liminal* situations a moment of "pure potentiality when everything trembles in the balance" can occur (Turner, 1974, p. 75). Play gives us agency to explore new forms of agency (Sicart, 2014) and *by exposing players to the unexpected it is making transformation possible* (Gordon, 2008, p. 12). It is also in this capacity that play is closely related to, yet the opposite of, ritual.

The Creative Tension Between Ritual and Play

Richard Schechner states that "all performances exist in a creative tension between ritual and play" (2012). This illustrates the close relationship between these three activities (or patterns of behaviour) so significant to human culture. Ritual and play are in many ways alike. According to Huizinga, "the ritual act has all the formal and essential characteristics of play" (1998 [1955], p. 18). They both support communities and often take place separate from ordinary life. Yet, the tension that Schechner points to comes out of fundamental differences between the two. According to Thomas S. Henricks (2015), these differences lie in the way in which ritual and play make us *relate to the world*. Rituals involves accepting, adjusting, or conforming to things outside of ourselves[3]. In contrast, play make us appropriate and create things. As Henricks has it, “players (and workers) want to transform the world; ritualists wish to be transformed by otherness” (2015, p. 55). The shift in agency and power is of course quite clear in this statement.

Now, the empirical study that this article presents takes place in an art museum. The reason why a museum was used for this design experiment was, apart from practical/strategic reasons, the opportunity to study play in an environment that simultaneously serve to protect and suppress it. According to Huizinga, play takes place outside “ordinary” life, both physically (e.g. in playgrounds, sports arenas etc.) and mentally (in the sense of it being “not serious”). This idea of play being completely separate, has been challenged by many play scholars over the years (e.g. Consalvo, 2009; Taylor, 2006). However, spaces that provide an opportunity to step outside of the everyday have a tendency to invite play as they offer a certain form of protection from real-life repercussions. Museums are such liminal places (Bell, 2002; Duncan, 1995). Here we come to relax, enjoy and learn new things (this does of course not apply to children or teenagers who are dragged along with us). The use of play for pedagogical purposes in museums has indeed become increasingly popular (Hein, 1998, 2006). However, there are structures inherent in these cultural institutions that can be said to work to confine play or to suppress its freer forms.

Building on Foucault, Tony Bennett (1995) argues that the modern museum, as it came into being during the 19th century, played an important role in imposing social order by defining the strict cultural hierarchies between “primitive” and “civilized” societies as well as between different societal groups. The responsibility of art museums were generally seen as to enlighten and improve visitors morally, socially and politically (Duncan, 1995, p. 16). The museum world has of course changed dramatically since then, especially after the development of so-called New Museology in the 1980s (Vergo, 1989). However, as institutions with a role to preserve and display culture, there are still mechanisms of power at play here[4].

---

[3] This of course does not mean that ritual cannot be a way of doing criticism. It can certainly be a way of encouraging reflexivity as well as being a way to take care of social and individual needs and concerns (see Stephenson, 2015, p. 62)

Marxist-feminist scholar Carol Duncan, describes art museums as "environments structured around specific ritual scenarios" (1995, p. 2). What she is referring to is how museums construct universes of their own, and how they guide and give cues on how to perform and respond to them. According to Duncan, these are rituals shaped by ideologies and power. In art museums, even though people continually "misread", scramble or resist cues on how to behave, most of us tend to act in the same manner. We walk slowly and quietly, stopping now and then to look at the artworks. Duncan compares this behaviour to following a script. According to her, the museum's sequenced spaces and arrangements of objects, its lighting and the architectural details provide both the script and a stage set. Visiting an art museum is in this sense *ritualized* (c.f. Stephenson, 2015, pp. 74–77). As Duncan puts it,

> The situation resembles in some respects certain medieval cathedrals where pilgrims followed a structured narrative route through the interior, stopping at prescribed points for prayer or contemplation (1995, p. 12).

If museums symbolize order (Rounds, 2006), then play represents the dynamic elements in materiality, biology, identity, society and culture, working towards affective intensification and *against efficacy*. For this very reason, play in museums is most often expected to be clearly contained and educational, because it then works as an element that fulfils its purpose in the ritual. Challenging these structures and expectations by introducing a freer form of play into the museum, is therefore an opportunity to study play as a form of artistic critique which disrupts the museum ritual. From a museum perspective, such an activity is actually aligned with a key discourse within museology referred to as "critical museology" (Shelton, 2013), which historically has included radical methods such as artist, activist and curatorial interventions in existing museum exhibits (Fletcher, 2008; *Guerrilla Girls*, n.d.; Lehrer & Butler, 2016; Mannheim & Behar, 1995).

---

[4] See e.g. Żychlińska & Fontana (2016) analysis of the Warsaw Rising Museum for an example on how museums are still used as a social, political and ideological instruments.

Exploring Affective Critical Play in an Art Museum

Never let me go is two-player experience for art museums, designed and implemented as part of the [left out] research project. The system lets the players take the roles of an Avatar and a Controller (Figure 1). The idea behind the two roles was to let one player be in charge of the other player's experience, in real time, in the museum. The prototype was designed as two interconnected web apps, but it was only the Controller app that provided interaction.

The Controller interface consisted of a menu (Figure 2) with different commands, questions or instructions that could be sent to the Avatar, who would receive them as pre-recorded voice messages. Both roles had a shared audio feed in order for the Controller to closely follow how the experience was playing out for the Avatar. The shared audio was also used to emphasise intimacy and create a shared space where the two participants would feel safe together.

In the Controller app, there are six different categories of prompts to choose from. The first category called 'Basic commands' consists of direct prompts such as "Explore", "Go", and "Turn around". The purpose is to facilitate movement and exploration of the museums and its exhibitions. The second is called 'Body' and consists of instructions relating to the body of the

Avatar, such as “Close your eyes”, “Hold your breath” or “Mimic this with your body”. This was included to encourage the participants to have a more embodied approach to the museum experience. The third category consists of personal questions that could be used in relation to the art, for example “What does it remind you of?” and “Who would you give this to?”. The idea behind this category was to encourage introspection and emotional connections with the artwork. The fourth category is ‘Feelings’ which consists of questions again to be related to the artworks, but this time in order to direct the Avatar’s attention to the emotional content of an art piece. Examples are “Can you feel the tenderness in this?” or “Can you sense the anger in this?”. The fifth category is called ‘Becomings’ and consists of prompts that are deliberately ambiguous and open for interpretation. Examples are “Become heavy”, “Become small” and “Become part of this”. As with the ‘Body’ category, these prompts were included for participants to explore new ways of being in the museum. Lastly, there is a category called ‘Imagine that’. This consists of instructions intended to trigger the Avatar’s imagination. The idea was both to facilitate narrative play and to induce a sense of urgency in order to intensify the Avatar’s experience. Examples of this category are “Imagine that these are your last memories” and “Imagine that everything here is connected”. Apart from the categories described, there is also a ‘Begin’ and an ‘End’ option in the menu. These trigger voice recordings with the purpose to frame the experience and give the players an idea of what to expect from each other.

The main trial of *Never let me go* was conducted between April 22 and May 2, 2019 at the National Gallery of [left out]. 20 people took part in the trial. 6 out of the 10 pairs were romantic couples; 1 pair were siblings; 2 were friends and 1 pair had just met for the first time. All were recruited beforehand through public invitations on social media, and from a mailing list for people interested in cultural experiences in the [left out] area. In total, there were people of 13 different nationalities (mostly European) taking part in the study. Each test was separated into four different sessions, approximately ten minutes long. After a session ended, the participants would swap roles.

Findings

The findings from the trial have previously been reported in detail from a design perspective (see [left out]). Here the focus is slightly different, less on design and more on expressions of critical play.

Alibi to Explore Boundaries and to Redefine Rules. From the post-trial interviews, it is clear that the playful attributes of the design were interpreted as an alibi to approach cultural, social, personal, material and even legal boundaries. The set up with one of the players, the Controller, taking charge over the situation, was helping the Avatars to explore new possibilities by accepting, refusing or reinterpreting the received prompts. As one of the players explains about the Avatar role: “It’s very clear that you don’t have to, but sometimes it’s easier to do things if someone else tells you to. So, you can also push yourself by thinking: It’s a command. It’s not really my responsibility. I could do it if someone asks me to”. In sometimes very subtle ways, the situation helped players become attentive of their own actions as well as giving them space to explore alternative (and emergent) ways of acting. This turned out to be liberating to most players, who reported feeling more relaxed, but also more stimulated than usual. As one player says, “It helps you to use a ‘beginner's mind’”. Another player tells this story: “I’m usually pretty aware of social surroundings, but at some point, I had this feeling like I wanted to walk on my toes or to spread my hands. I think you told me to ‘become light’. And that was a bit challenging. At the same time, I felt like doing it. And it was like yeah, there are people here, but it’s not a bad thing. So, I just did it”.

In order to highlight the particular rules and constraints which are in effect when visiting a museum one prompt was particularly useful, namely “Touch”. Interestingly, this prompt was quite popular with the players who used it frequently. Everyone who are familiar with museums know that you are almost never allowed to touch anything. The tension between the command and the reality therefore served to trigger numerous reactions and reflections. All the players felt a strong obligation to follow the prompts they received, therefore in this case they needed to find creative ways in which to respond. As one player explains, “Obviously you don’t want to touch the art, even though that is your first impulse. Instead I touched him, and I touched the floor once”. Another player describes this situation in which she ended up putting her hands over her heart: “I was in the middle of the room and there were only paintings. So, for me it was like touch myself. And also, at that point the command made me think about am I touched by the art? In a sense, it made me reflect a little bit more about the art and me and being in the room”.

This acute awareness of limits and possibilities led players to redefine the rules of the museum visit for themselves. As this player describes it, “I felt freer than I usually do. Like oh what is there to touch in here? You can touch the stairs. I know you can touch that. You can touch the walls, but it’s not really okay because I know they paint it. Okay, so maybe you wouldn’t do that too much. So, you find the rules”.

Making use of their new freedom whilst not getting into trouble seems to have been a common strategy. This would also put focus on how the players themselves were being observed by guards and by security cameras. As one player explains, “I had to look at the camera in the corner and just touch next to the painting at the wall, just to make sure that none of us would get into trouble”. The presence of other museum visitors was also restricting the players in their behavior. “I was limiting myself to what I feel is acceptable behavior. And without any onlookers I might have done stuff bigger", says one player. This made it very clear which behavior the players deemed as inappropriate. For example, one player explains, "There was a limit. I didn't feel like running through the museum. But there was also a limit for how ridiculous you could act". However, players would also enjoy pushing these exact limits. One player gives this example: "So, the Controller asked me to 'Follow' and I started following someone else that was around. I just chose to follow a random stranger and that was fun. It gave you a sense of breaking the boundaries of this person's privacy". In this sense, the constraints of the designs paradoxically led to the expansion of the players' possibilities for movement. It also had a clear effect on their social and affective engagements.

Exposing Power Relations. From the trial it became clear that by putting relations into motion, play has the capacity to foreground different power structures as well as to temporarily alter them. A convention that we seldom question, is that visitors come to museums to look at things. This very basic foundation of the museum as an institution, as well as the relationship between humans and objects for that matter, was also put into question by the game. Again, this was a play with agency and awareness achieved through simple means. Included in the options was the prompt: "Imagine that this is looking back at you", and it proved to be enough to trigger strong emotional reactions and revelations for the players. As one player describes it: "That was super strong: 'Imagine that something is staring back at you'. I was in front of this little octopus sculpture or something. I was quite looking at it. I really like sculpture and I always look at their expression. And when I heard that, it was so real and so connected, because yes, it is looking back at me". For another player the prompt made her acutely aware of that she herself was being watched. She explains it this way: "A thing that I found funny was to apply things to other objects that wasn't necessarily part of the art. So, with 'Imagine this is looking back at you', I kept thinking about it, and I was like: Oh so this chair is looking back at me. I'm fine with that. Then I looked at the surveillance camera and I was like Oh yeah you're also looking. I'm not as comfortable with that".

Emergence of Meaning and New Behaviour. The play opened up a wider field of possible interpretations of the museum context. However, it also gave the opportunity to explore ways of becoming that went beyond language, signification and discourse. One example of the interplay between interpretation and becoming can be found in the following description from a player of *Never let me go*: She says, "I think it was a chance to connect with the art and not just be an observer, but to be part of the paintings but also the whole room. It helped me enjoy it and understand it more. And think about it more. It wasn't just my eyes watching. It was my whole mind observing". Moreover, it was interesting to see how players explored ways of becoming that went beyond the boundary of their material body. One example is when one of the players received the prompt "Become tall" and she says: "I felt it inside. I was looking at something up there and I was imagining that I was on the same eye level as it, like that I was up there".

Discussion

The question to ask at this point is perhaps, if *all* play in fact is critical in the sense that it fundamentally affects our relationship to the world (or the museum as in the examples above)? To answer this question, I would like to point out a few things. Firstly, a change in the way we relate (to someone or something) is not necessarily positive, as in the case of transformations which are not always towards the better.[5] Affective methods are often associated with fascism or capitalism and the form of power to which Massumi refers to when he states, "power [today] is no longer fundamentally normative, like it was in its disciplinary forms, it's affective." (Massumi, 2015, pp. 30–31). To work critically, relational and performative techniques need to be derived from a "radical democratic theory and practice", as Butler says, which allows its participants "to live a life politically, in relation to power, in relation to others, in the act of assuming responsibility for a collective future" (2004, pp. 224, 226). Not all play would live up to these ideals I'm sure we can agree, especially as play often work as a form of escapism.

---

[5] As Butler herself points out, the Nazis challenged and resignified several norms as part of their seizure of power in Germany in the 1930s (2004, p. 224).

However, as I have pointed out before, there is something fundamentally powerful in play in its capacity to letting us experience the plasticity of relations, 'worlds' and boundaries in a hands-on manner. It liberates things (such as human and nonhuman bodies, spaces and even abstract ideas and concepts) by peeling away power structures (Agamben, 2007). At the same time, play creates new temporary structures that are more open to interpretation (Sengers & Gaver, 2006; Sicart, 2020). It also allows for the exploration of different capacities and potentialities arising in the encounter between the players (Paasonen, 2018) as well as in relation to the context in which the play is situated. As it is significant for any critical practice to convince us that change is possible (as well as motivate us to do so), this is a blessing. At the same time, as Sicart puts it, "play is a dance between creation and destruction, between creativity and nihilism" (2014, p. 3). Any play which possesses the power of paidea is to its nature disorderly and difficult pin down to a specific cause (and it is in this sense amoral). Therefore, if play is to be used as a critical practice, this unruliness needs to be embraced in one way or another.

The Dangers and Pleasures of Playing with Boundaries

Play that lets us explore social, cultural and material boundaries have the potential to touch us profoundly, as can be seen from the empirical study above. However, as sociologist Christena

Nippert-Eng underlines, this seemingly innocent behaviour can in certain circumstances be quite dangerous. As she writes,

> Bending or redrawing the line between classificatory categories is some of the most dangerous activity that humans can engage in. The edges of categories and the relationships between them are the backbone of a culture. Religions are founded, wars are fought, personal identities are forged on, and everyday life is lived over and through these very things. (2005, p. 308)

Depending on who we are and where we are situated, make it more of less possible for us to engage in these forms of activities at all. On the other hand, we should not forget that the "danger" of play is a fundamental part of its attraction. Or as Schechner puts it,

> The perils of playing are often masked or disguised by saying that play is fun, voluntary, a leisure activity, or ephemeral – when in fact the fun of playing, when there is fun, is in playing with fire, going in over one's head, inverting accepted procedures and hierarchies (1988, p. 5).

This excitement could clearly be seen in the players of *Never let me go*. However, it was also apparent that players felt awkward or uncomfortable in crossing certain boundaries. It is therefore highly important that designs which foster this type of play always include ways for players to opt out.

Balancing Acts between Ritual and Play

Lastly, I would like to make it quite clear that my intention is not to make a black and white distinction between ritual and play, where play would somehow be regarded as more preferable. To the contrary, the findings from both of the designs show that there is a continuous oscillation between what can be described as playful and ritualistic behaviour as well as mindset (emphasising the simultaneous tendencies of play to be orderly and disorderly). Moreover, when it comes to designed experiences, play is often inserted into a ritualistic framework. This is both to safeguard the activity and to give participants the trust to engage more deeply. It can of course also be a way to protect the surroundings from the destructive sides of play.

When it comes to *Never let me go* the balancing act between ritual and play was deliberately foregrounded and incorporated into the system as one player was spontaneously (and playfully) creating a ritual for the other. Henricks writes,

> Rituals – be they bodily, psychological, social, or cultural – rely on seemingly external formations. The ritual actor wishes to be guided by these formations, in part so that consciousness can be released to address other matters. (2015, p. 55)

In this sense, the formations, rules, or constraints provided by the ritual are enablers specifically for the playful shifts in actions and relations as well as the exploration of boundaries and possibilities of becoming that I have addressed in this article. To guide and to follow, to create and to use, to challenge and to submit are all different sides to the dance of experience.

Conclusion

In this article I have elaborated on the relational and performative qualities and capacities of play and how these can work as part of a critical practice aligned with what Clair Bishop refers to as artistic critique (2012). To my aid, I have had an empirical study of play taking place in an art museum in [left out]. The setting was chosen particularly to study the dynamics of play taking place in an environment which, in many ways, is dedicated to ritualised practices. The resulting balancing acts between ritual/play, real/pretence, public/private, among others, led to players having an acute awareness of personal, social, cultural, material as well as legal boundaries of the museum experience. It also helped them explore emergent possibilities of acting and becoming. I believe this sheds some light on the different potentials (and shortcomings) of using play as a form of enacted (and emergent) critique. It is my conclusion that the relational and performative capacities of play can work both to expose or challenge the illusion of stability; of identity, of culture and of social practices, and to expand our ability to affect and be affected – to act in the world and live more intensively. I therefore see the design space, which I have named, "affective critical play" to be a both powerful and important area for further research.

References

Agamben, G. (2007). In Praise of Profanation. In J. Fort (Trans.), *Profanations* (pp. 73–92). MIT Press.

Anderson, B. (2016). *Encountering Affect: Capacities, Apparatuses, Conditions*. Routledge.

Bakhtin, M. (1984). *Rabelais and His World*. Indiana University Press.

Bakhtin, M. (2008). *Problems of Dostoevsky's Poetics* (M. Holquist, Ed.; C. Emerson, Trans.). University of Texas Press.

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (2nd ed.). Duke University Press Books.

Barthes, R. (2005). *The Neutral* (R. E. Kraus & D. Hollier, Trans.). Columbia University Press.

Bell, G. (2002). Making sense of museums: The museum as' cultural ecology'. *Intel Labs*, *1*, 1–17.

Bennett, T. (1995). *The Birth of the Museum: History, Theory, Politics*. Routledge.

Bishop, C. (2012). *Artificial Hells. Participatory Art and the Politics of Spectatorship*. Verso.

Boltanski, L., & Chiapello, E. (2005). *The New Spirit of Capitalism*. Verso.

Brotchie, A. (1995). *A Book of Surrealist Games* (M. Gooding, Ed.). Shambhala.

Butler, J. (1990). Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. In S.-E. Case (Ed.), *Performing Feminism, Feminist Critical Theory and Theatre* (pp. 270–282). Johns Hopkins University Press.

Butler, J. (1993). *Bodies That Matter*. Routledge.

Butler, J. (1997a). *Excitable Speech: A Politics of the Performative*. Routledge.

Butler, J. (1997b). *The Psychic Life of Power: Theories in Subjection*. Stanford University Press.

Butler, J. (1999). *Gender Trouble: Feminism and the Subversion of Identity* (2nd ed.). Routledge.

Butler, J. (2004). *Undoing Gender*. Routledge.

Caillois, R. (2001). *Man, Play and Games*. University of Illinois Press.

Consalvo, M. (2009). There is No Magic Circle. *Games and Culture*, *4*(4), 408–417.

Critchley, S. (2011). *On Humour (Thinking in Action)*. Routledge.

Duncan, C. (1995). The art museum as ritual. In *Civilizing rituals: Inside public art museums* (pp. 7–18). Routledge.

Eberle, S. (2014). The Elements of Play: Toward a Philosophy and a Definition of Play. *American Journal of Play*, *6*, 214–233.

Flanagan, M. (2009). *Critical Play: Radical Game Design*. The MIT Press.

Fletcher, K. R. (2008). James Luna. *Smithsonian Magazine*. https://www.smithsonianmag.com/arts-culture/james-luna-30545878/

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. Anchor.

Gordon, G. (2008). What is play? In search of a definition. In D. Kuschner (Ed.), *From children to Red Hatters: Diverse images and issues of play* (Vol. 8, pp. 1–13). University Press Of America.

Gregg, M., & Seigworth, G. J. (Eds.). (2010). *The Affect Theory Reader*. Duke University Press.

Guerrilla Girls. (n.d.). Guerrilla Girls. Retrieved 26 August 2020, from https://www.guerrillagirls.com

Hein, G. E. (1998). *Learning in the Museum*. Routledge.

Hein, G. E. (2006). Museum education. In S. MacDonald (Ed.), *A Companion to Museum Studies* (pp. 340 – 352). Blackwell.

Henricks, T. S. (2009). Orderly and Disorderly Play. *American Journal of Play*, *2*(1), 12–40.

Henricks, T. S. (2015). *Play and the Human Condition*. University of Illinois Press.

Huizinga, J. (1998). *Homo Ludens: A study of the play-element in culture*. Routledge.

Kozel, S. (2008). *Closer: Performance, Technologies, Phenomenology*. The MIT Press.

Kozel, S. (2012). AffeXity: Performing Affect with Augmented Reality. *The Fibreculture Journal*, *21*.

Lehrer, E., & Butler, S. R. (2016). *Curatorial Dreams: Critics Imagine Exhibition*. McGill-Queen's University Press.

Loxley, J. (2007). *Performativity*. Routledge.

Mannheim, B., & Behar, R. (1995). In Dialogue: The Couple in the Cage: A Guatinaui Odessy. *Visual Anthropology Review*, *11*(1), 118–127. https://doi.org/10.1525/var.1995.11.1.118

Massumi, B. (2015). *Politics of Affect*. Polity Press.

Nippert-Eng, C. (2005, August). Boundary Play. *Space and Culture*, *8*(3), 302–324.

Paasonen, S. (2018). *Many Splendored Things*. Goldsmiths Press.

Performance Studies: An Introduction—Play. (2012, December 17). https://www.youtube.com/watch?v=OsVuWAE1OCs

Poremba, C. (2007). Critical Potential on the Brink of the Magic Circle. *2007 International DiGRA Conference*, 772–778.

Rounds, J. (2006). Doing identity work in museums. *Curator: The Museum Journal*, *49*(2), 133–150.

Schechner, R. (1988). Playing. *Play & Culture*, *1*(1), 3–19.

Sengers, P., & Gaver, B. (2006). Staying open to interpretation: Engaging multiple meanings in design and evaluation. *Proceedings of the 6th Conference on Designing Interactive Systems*, 99–108. https://doi.org/10.1145/1142405.1142422

Shelton, A. (2013). Critical Museology: A Manifesto. *Museum Worlds*, *1*(1), 7–23. https://doi.org/10.3167/armw.2013.010102

Sicart, M. (2014). *Play Matters*. MIT Press.

Sicart, M. (2020). Playing software: The role of the ludic in the software society. *Information, Communication & Society*, 1468–4462.

Sicart (Vila), M. A. (2011). Against Procedurality. *Game Studies*, *11*(3).

Stephenson, B. (2015). *Ritual: A Very Short Introduction*. Oxford University Press.

Sutton-Smith, B. (1999). Evolving a consilience of play definitions: Playfully. In S. Reifel (Ed.), *Play Contexts Revisited* (Vol. 2, pp. 239–256). Praeger Publishers Inc.

Sutton-Smith, B. (2001). *The Ambiguity of Play*. Harvard University Press; Revised ed. edition.

Taylor, T. L. (2006). *Play Between Worlds. Exploring Online Game Culture.* The MIT Press.

Turner, V. (1974). Liminal to Liminoid, in Play, Flow, and Ritual: An Essay in Comparative Symbology. *Rice Institute Pamphlet - Rice University Studies*, *60*(3).

Vergo, P. (1989). *The New museology*. Reaktion Books.

Wetherell, M. (2013). Affect and discourse – What's the problem? From affect as excess to affective/discursive practice. *Subjectivity*, *6*(4), 349–368.

Wetherell, M. (2015). Trends in the Turn to Affect: A Social Psychological Critique. *Body & Society*, *21*(2), 139–166. https://doi.org/10.1177/1357034X14539020

Żychlińska, M., & Fontana, E. (2016). Museal Games and Emotional Truths: Creating Polish National Identity at the Warsaw Rising Museum. *East European Politics and Societies*, *30*(2), 235–269.

Figures

Figure 1

A Model of Never Let Me Go

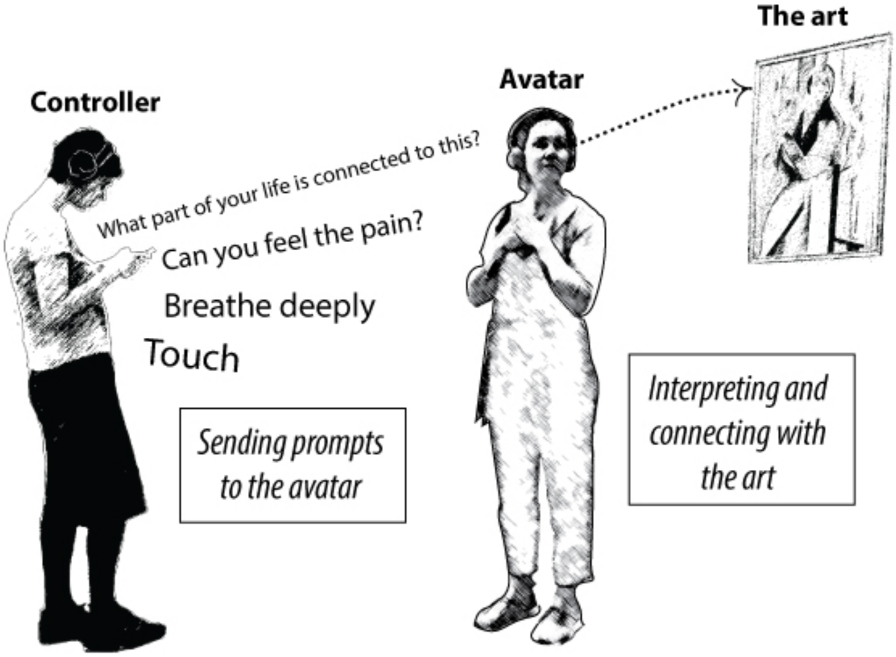
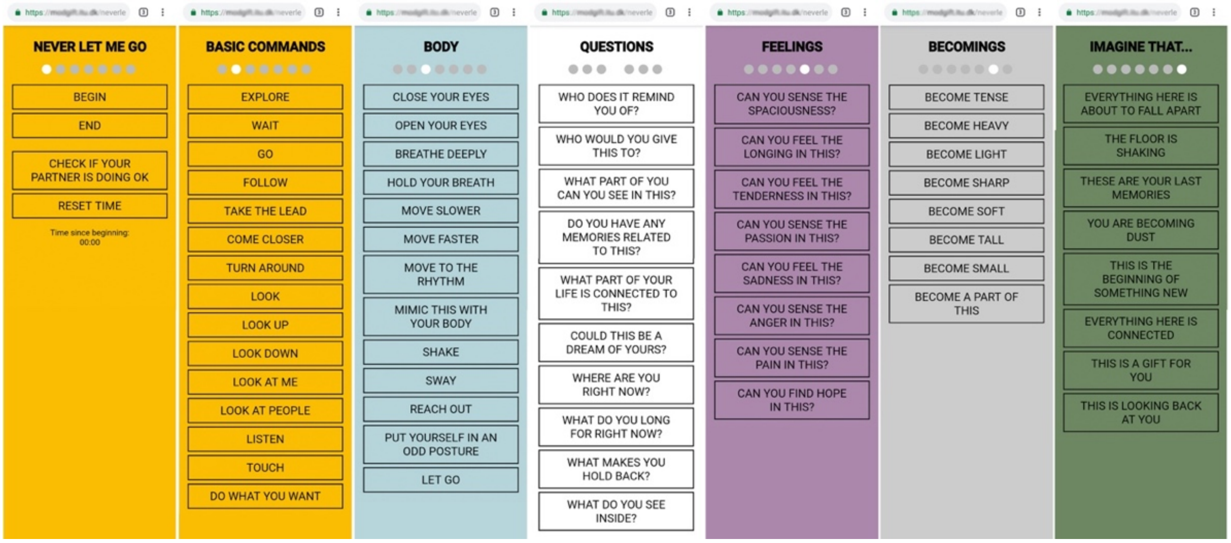

The art
Controller
Avatar
What part of your life is connected to this?
Can you feel the pain?
Breathe deeply
Touch
Sending prompts to the avatar
Interpreting and connecting with the art

Figure 2

Screenshots from the Controller App



NEVER LET ME GO

- BEGIN
- END
- CHECK IF YOUR PARTNER IS DOING OK
- RESET TIME

Time since beginning: 00:00

BASIC COMMANDS

- EXPLORE
- WAIT
- GO
- FOLLOW
- TAKE THE LEAD
- COME CLOSER
- TURN AROUND
- LOOK
- LOOK UP
- LOOK DOWN
- LOOK AT ME
- LOOK AT PEOPLE
- LISTEN
- TOUCH
- DO WHAT YOU WANT

BODY

- CLOSE YOUR EYES
- OPEN YOUR EYES
- BREATHE DEEPLY
- HOLD YOUR BREATH
- MOVE SLOWER
- MOVE FASTER
- MOVE TO THE RHYTHM
- MIMIC THIS WITH YOUR BODY
- SHAKE
- SWAY
- REACH OUT
- PUT YOURSELF IN AN ODD POSTURE
- LET GO

QUESTIONS

- WHO DOES IT REMIND YOU OF?
- WHO WOULD YOU GIVE THIS TO?
- WHAT PART OF YOU CAN YOU SEE IN THIS?
- DO YOU HAVE ANY MEMORIES RELATED TO THIS?
- WHAT PART OF YOUR LIFE IS CONNECTED TO THIS?
- COULD THIS BE A DREAM OF YOURS?
- WHERE ARE YOU RIGHT NOW?
- WHAT DO YOU LONG FOR RIGHT NOW?
- WHAT MAKES YOU HOLD BACK?
- WHAT DO YOU SEE INSIDE?

FEELINGS

- CAN YOU SENSE THE SPACIOUSNESS?
- CAN YOU FEEL THE LONGING IN THIS?
- CAN YOU FEEL THE TENDERNESS IN THIS?
- CAN YOU SENSE THE PASSION IN THIS?
- CAN YOU FEEL THE SADNESS IN THIS?
- CAN YOU SENSE THE ANGER IN THIS?
- CAN YOU SENSE THE PAIN IN THIS?
- CAN YOU FIND HOPE IN THIS?

BECOMINGS

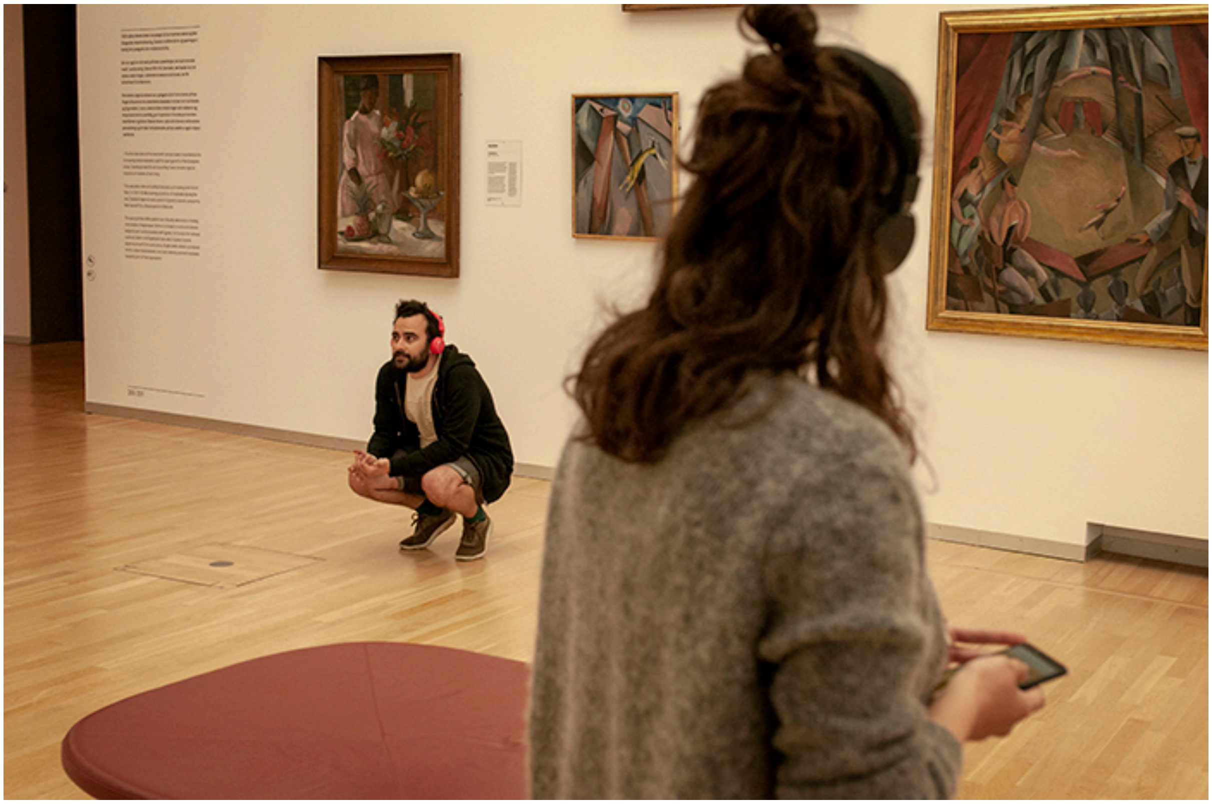
- BECOME TENSE
- BECOME HEAVY
- BECOME LIGHT
- BECOME SHARP
- BECOME SOFT
- BECOME TALL
- BECOME SMALL
- BECOME A PART OF THIS

IMAGINE THAT...

- EVERYTHING HERE IS ABOUT TO FALL APART
- THE FLOOR IS SHAKING
- THESE ARE YOUR LAST MEMORIES
- YOU ARE BECOMING DUST
- THIS IS THE BEGINNING OF SOMETHING NEW
- EVERYTHING HERE IS CONNECTED
- THIS IS A GIFT FOR YOU
- THIS IS LOOKING BACK AT YOU

Figure 3

An Avatar Squatting in Front of a Painting as the Controller is Watching



Paper 7:

What makes us able to play critically?

Ryding, K.

Published in:
In Proceedings of the 2020 DiGRA International Conference: Play Everywhere (DiGRA ’20). 1-3.

What Makes Us Able to Play Critically?

Karin Ryding
IT University of Copenhagen
Rued Langgaards Vej 7
DK-2300 Copenhagen S, Denmark
kary@itu.dk

INTRODUCTION

The concept of "critical play" comes from Mary Flanagan and her work on games designed for political, aesthetic, and social critique (2009). According to her, critical play is a form of creative exploration of the social and the political. It is a radical way to challenge ideas, beliefs and social expectations through the creation of "play environments and activities that represent one or more questions about aspects of human life" (Flanagan 2009, 6). This extended abstract builds on Flanagan's notion of critical play by coming back to the question: what does it mean to play *critically*? By taking a step outside of video games and entering into the "real world", this is an attempt to unfold some of the psychological conditions for critical play, in order to understand how these lead to certain experiences. This is done by putting the focus on attitudes or states of mind held by the players. It is an exploration of three different, but intimately intertwined, playful states of mind which I argue are enablers for critical play to occur in a real-world environment, namely *brink awareness*, *boundary flexibility* and *openness to 'world'-travelling*. These will be briefly elaborated upon in this abstract, with the intention to set the ground for future work.

MENTAL AND SOCIAL BOUNDARIES OF PLAY

When play takes place not in a special, isolated playground, but in environments not designed for or associated with play (but perhaps with work or ritual), all sorts of tensions will naturally arise. This doesn't necessarily stop people from playing there, on the contrary, it potentially makes play even more thrilling or interesting. Tensions can be used deliberately to place a focus on dominant social norms and conventions, or on rituals shaped by ideologies and power. However, for play to be sustained, or to occur at all, it needs to be bounded both mentally and socially.

According to Stenros, it is important to differentiate between these two boundaries; the psychological border set up by adopting a playful mindset (or "lusory attitude" as Suits would call it (2005)) and the border set up socially through negotiation between the participants (2012, 1). The mental border (or psychological bubble) of play is experienced as a "protective frame which stands between you and the 'real' world" (Apter 1991, 15). Additionally, when there is more than one person engaged in playful activity, a social contract is established between the participants (or what Stenros defines as the "magic circle"). The function it serves is to sustain play even though players might slip in and out of the playful mindset (Stenros 2012).

DIFFERENT STATES OF MIND IN CRITICAL PLAY

Through play we appropriate and reinvent the world around us (Henricks 2015; Sicart 2014). If the playful mindset is an important condition for play to be entered into (just as the social contract is to sustain it), the question is which additional attitudes or states of mind are significant in the process of critical play. What makes us able to play *critically*?

Proceedings of DiGRA 2020

© 2020 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

Brink Awareness

The state of mind that I here call “brink awareness” is inspired by Cindy Poremba’s work on brink games and brink play. These are games, or play, that explore the fringes of the magic circle. It is a transgression of, or at least, a play with “the contested space at the boundary of games and life” (Poremba 2007, 772). Poremba draws on Luhmann’s work on functional systems theory to tease out how this type of play has critical potential.

When play takes place in an environment which is constantly challenging its existence, it forces participants to experience a “second order observation” (Luhmann 2012) of the boundaries between inside and outside, game and life. This “brink awareness” has the potential for players to become conscious of social norms and conventions as well as of legal boundaries, as they are dependent on them when navigating the play situation.

Boundary Flexibility

Sociologist Christena Nippert-Eng has developed a concept of play she calls “boundary play”, which is about redrawing, or even inverting, the classificatory boundary between two related, cultural-cognitive categories or polarities, such as powerless-powerful, private-public, masculine-feminine, and real-pretend (2005). Boundary play manifests both in players’ behaviour as embodied performances, and in their conversations.

In order for boundary play to take place, according to Nippert-Eng, players must possess not only shared normative categorical knowledge, but also a flexible mind allowing for categorical imagination – what I call “boundary flexibility”. This includes the ability to translate “their alternative mental boundary redrawings into behaviours that are both recognizable and perceived as playful and compelling by those with whom they wish to play” (Nippert-Eng 2005, 305).

Openness to ‘World’-Travelling

Feminist philosopher and activist María Lugones has brought to my attention a particular feature of the outsider's existence – what she calls ‘world’-travelling (1987). The travelling she refers to is the conscious shift from “the mainstream construction of life where she is constructed as an outsider to other constructions of life where she is more or less 'at home.'” (Lugones 1987, 3). Outsiders to the mainstream practice ‘world’-travel mostly out of necessity, but as Lugones points out, this exercise can just as well be carried out wilfully and playfully by the outsider, or by those who are at ease in the mainstream.

How then is one open to ‘world’-travelling? For Lugones, this form of travel is not about acting but more about becoming. She underlines that these journeys are not to be undertaken with an agonistic mindset which would make the traveller into a conqueror, an imperialist. Nor is it about abandoning oneself or being too rooted anywhere. Rather it is about fostering a creative attitude towards ‘worlds’ in general. Or as she puts it, it is about being open to “understand what it is to be them and what it is to be ourselves in their eyes” (Lugones 1987, 17).

REFERENCES

Apter, Michael J. 1991. “A Structural-Phenomenology of Play”. In *Adult Play: A Reversal Theory Approach*, edited by Michael J. Apter and Johan H. Kerr. Amsterdam: Swets & Zeitlinger.

Flanagan, Mary. 2009. *Critical Play: Radical Game Design*. Cambridge, MA: The MIT Press.

Henricks, Thomas S. 2015. *Play and the Human Condition*. University of Illinois Press.

Lugones, María. 1987. “Playfulness, “World”-Travelling, and Loving Perception”. *Hypatia*, 1987.

Luhmann, Niklas. 2012. *Introduction to Systems Theory*. Polity.

Nippert-Eng, Christena. 2005. “Boundary Play”. *Space and Culture*, August 2005.

Poremba, Cindy. 2007. “Critical Potential on the Brink of the Magic Circle”. In *2007 International DiGRA Conference*, 772–78.

Sicart, Miguel. 2014. *Play Matters*. Playful Thinking. MIT Press.

Stenros, Jakko. 2012. “In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play”. In *2012 International DiGRA Nordic Conference*, 10:1–19.

Suits, Bernard. 2005. *The Grasshopper: Games, Life and Utopia*. Broadview Press.